

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2002-108632

(43)Date of publication of application : 12.04.2002

(51)Int.Cl.

G06F 9/46
G06F 15/00

(21)Application number : 2000-297138

(71)Applicant : DAINIPPON PRINTING CO LTD

(22)Date of filing : 28.09.2000

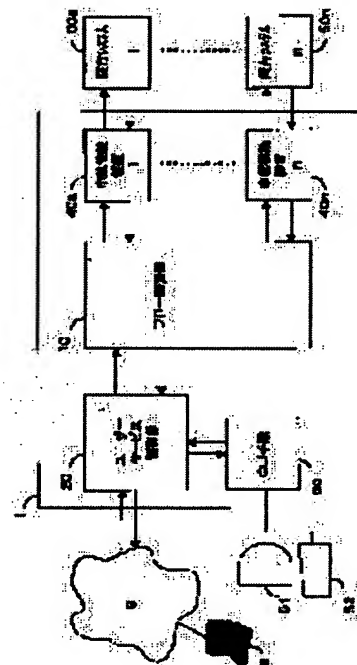
(72)Inventor : NAKAJIMA TAKAHIRO
KAWAKAMI YOSHINORI
NEGAMI TOSHIYUKI
KASAI HIROAKI
NOSAKA YOSHIE
SAITOU MISA

(54) CONTROLLER WORKING WITH EXISTING SYSTEM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a controller working with the existing system by which an integration cost when an integration system by linking systems independently developed and operated in companies and departments respectively is constructed from the systems and a maintenance cost after integration is reduced to the utmost.

SOLUTION: The above problem is solved by the controller 1 working with the existing system to easily realize a complex information processing system to perform a more complicated link processing operation by providing the controller with a user service control part 20, a flow control part 10 and one or more external system repeating and connecting devices 40 and linking plural existing information processing systems 50 by exchanging pieces of information in which these components are described in a general-purpose description method. The flow control part 10 is operated according to a processing flow file 15 in which operation procedures to respond to a given processing request are defined. A structured language with tag is adopted in the general-purpose description method of a processing request and a processing result.



LEGAL STATUS

[Date of request for examination] 03.12.2002

[Date of sending the examiner's decision of rejection] 07.02.2006

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

CLAIMS

[Claim(s)]

[Claim 1] It has the user service control section, the flow control section, and one or more external-system trunk connection equipments. It is the existing system cooperation control device which the existing information processing system is made to cooperate and is operated. Said user service control section While changing the processing demand from a user into the format described by the general-purpose notation and passing said flow control section It is what changes into the format which suited the receipt in the processing result described by the general-purpose notation from the flow control section, and suited a user's client equipment in this, and is returned to a user. Said flow control section Interpret the processing demand described by the general-purpose notation, and a processing demand required for each external-system trunk connection equipment connecting with the existing information processing system is published in suitable sequence. It is what creates the processing result which performed a receipt and required data conversion for those processing results, collected this, and was eventually described by the general-purpose notation, and is returned to the user service control section. As opposed to the existing information processing system which takes charge of the processing demand which said external-system trunk connection equipment is designed and prepared for every existing information processing system, and was described by the general-purpose notation according to a receipt and this It is what publishes the processing demand of a format depending on the system, describes the obtained result by the general-purpose notation, and is returned to said flow control section. The existing system cooperation control unit which makes it possible to realize simply compound information processing system which two or more existing information processing system is made to cooperate, and performs more complicated cooperation processing actuation by exchanging the information these components were described to be by the general-purpose notation.

[Claim 2] Said flow control section is the existing system cooperation control unit [equipped with two or more processing flow files which operate according to the processing flow file which defined the operations sequence for meeting the given processing demand, and embraced the class of processing demand] according to claim 1.

[Claim 3] The processing flow selection section which chooses a suitable processing flow file from the processing demand to which said flow control section was given from the user service control section, The processing flow activation section which interprets the

selected processing flow file, and publishes a required processing demand, or performs data conversion, and returns the obtained result to the user service control section, The existing system cooperation control unit according to claim 2 which is a thing equipped with the adapter control section which transmits the processing demand which chose suitable external-system trunk connection equipment, and said processing flow activation section published there.

[Claim 4] The processing demand converter from which said user service control section changes the processing demand from a user into the processing demand as which it was described by the general-purpose notation, The processing result converter which changes the processing result returned from said flow control section into the data format doubled with a user's client equipment according to the content of the processing result conversion file which described the processing result transformation rule prepared beforehand, since -- the existing system cooperation control unit according to claim 1 which is what is constituted.

[Claim 5] The processing demand conversion file which defined the transformation rule for changing said external-system trunk connection equipment into the processing demand which depends for the given processing demand on the existing system which it takes charge of, The existing system cooperation control unit according to claim 1 which is what is equipped with a conversion file as a result of defining the transformation rule for describing the processing result obtained from this existing system by the general-purpose notation, performs required conversion with reference to these files, and performs trunk connection with the existing system.

[Claim 6] The existing system cooperation control unit given in either of claim 1 to claims 5 characterized by performing description of the general-purpose notation of the processing demand which said existing system cooperation control unit treats, and a processing result, and description of said processing flow file by the structured language with a tag.

[Claim 7] The existing system cooperation control unit according to claim 6 characterized by performing description of the general-purpose notation of the processing demand which said existing system cooperation control unit treats, and a processing result, and description of said processing flow file by XML, and describing the conversion procedure in various kinds of conversion files by XSLT.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] It is related with the equipment using the system control technique or such a technique of making two or more information processing system developed independently cooperating.

[0002]

[Description of the Prior Art] In order to perform cooperation between the systems developed independently respectively, the format for having a dialog with systems conventionally was fixed uniquely, and the program modification and the addition which followed the agreement for every system were performed. The system is conventionally built and employed for every single enterprise or single operation. In recent years, the opportunity to cooperate the existing system between enterprises and between operation, and offer new service by change of an operation gestalt, the spread of network, etc., is increasing. In realizing cooperation between such systems conventionally, for every system, the approach of a processing demand or transfer of data was decided uniquely, and was developed, and a subsequent escape and subsequent modification were seldom taken into consideration.

[0003]

[Problem(s) to be Solved by the Invention] By the above conventional system cooperation technique, the development time and cost of all systems -- program modification occurs -- had started enormously to change the case where he wants to add the system which newly cooperates from using a format of original switched data, and performing the program correction doubled with the exchange data format, and the flow of processing between the system.

[0004] Let it be a technical problem to offer the existing system cooperation control unit which enables it to devise this invention in consideration of the trouble of such a conventional technique, and to make as small as possible the integration cost at the time of building the integration system which made them cooperate from the system which was designed independently, was developed and has been respectively employed in the enterprise or the category, and the maintenance cost after integrating.

[0005]

[Means for Solving the Problem] Then, this invention is equipped with the user service

control section, the flow control section, and one or more external-system trunk connection equipments. It is the existing system cooperation control device which the existing information processing system is made to cooperate and is operated. Said user service control section While changing the processing demand from a user into the format described by the general-purpose notation and passing said flow control section It is what changes into the format which suited the receipt in the processing result described by the general-purpose notation from the flow control section, and suited a user's client equipment in this, and is returned to a user. Said flow control section Interpret the processing demand described by the general-purpose notation, and processing ***** required for each external-system trunk connection equipment connecting with the existing information processing system is published in suitable sequence. It is what creates the processing result which performed a receipt and required data conversion for those processing results, collected this, and was eventually described by the general-purpose notation, and is returned to the user service control section. As opposed to the existing information processing system which takes charge of the processing demand which said external-system trunk connection equipment is designed and prepared for every existing information processing system, and was described by the general-purpose notation according to a receipt and this It is what publishes the processing demand of a format depending on the system, describes the obtained result by the general-purpose notation, and is returned to said flow control section. By exchanging the information these components were described to be by the general-purpose notation Let it be a summary to solve the above-mentioned technical problem with the existing system cooperation control unit which makes it possible to realize simply compound information processing system which two or more existing information processing system is made to cooperate, and performs more complicated cooperation processing actuation.

[0006] One of the desirable embodiments of this invention is the existing system cooperation control unit equipped with two or more processing flow files which said flow control section operates according to the processing flow file which defined the operations sequence for meeting the given processing demand, and embraced the class of processing demand. By separating the processing flow file which describes the procedure of an engine part and a processing flow of performing a processing flow, it can respond now to modification of a processing flow flexibly. Moreover, when a fixed regulation is needed for the description approach of a processing flow file, it becomes possible to describe cooperation actuation of the existing information processing system systematically as a result.

[0007] In order to realize said embodiment, more specifically The processing flow selection section which chooses a suitable processing flow file from the processing demand to which said flow control section was given from the user service control section, The processing flow activation section which interprets the selected processing flow file, and publishes a required processing demand, or performs data conversion, and returns the obtained result to the user service control section, It is desirable to choose suitable external-system trunk connection equipment, and to constitute so that it may have the adapter control section which transmits the processing demand which said processing flow activation section published there.

[0008] One of the desirable embodiments of this invention said user service control section The processing demand converter which changes the processing demand from a user into the processing demand described by the general-purpose notation, The processing result converter which changes the processing result returned from said flow control section into the data format doubled with a user's client equipment according to the content of the processing result conversion file which described the processing result transformation rule prepared beforehand, since -- it is the constituted existing system cooperation control unit. It becomes possible to realize the response to various user client equipments flexibly by making transformation rule separate from transform-processing logic in the form of a processing result conversion file.

[0009] One of the desirable embodiments of this invention said external-system trunk connection equipment The processing demand conversion file which defined the transformation rule for changing into the processing demand which depends for the given processing demand on the existing system which it takes charge of, It is the existing system cooperation control unit constituted so that it may have a conversion file as a result of defining the transformation rule for describing the processing result obtained from this existing system by the general-purpose notation, and required conversion might be performed with reference to these files and trunk connection with the existing system might be performed. It becomes possible to realize flexibly the response to various existing information processing system by making transformation rule separate from transform-processing logic in the form of a conversion file as a result of a processing demand conversion file.

[0010] It is desirable to perform description of the general-purpose notation of the processing demand which the existing system cooperation control unit of the invention in this application treats, and a processing result, and description of said processing flow file by the structured language with a tag. Generally a processing demand and the expression of a processing result are because it has a certain structure. Moreover, it is

because it is easy to describe various kinds of transformation rules. Especially, XML (eXtensible Markup Language) which is one of the criteria of a tagging structured statement document description language can be used. Since the Internet technique and compatibility, such as a WWW browser, are high, as for XML, it is more desirable to use XML in the existing system cooperation control unit of this invention.

[0011] When using XML as a structured data expression, when XSLT (XLS Translator) which is the subset of XSL (eXtensible Stylesheet Language) which is the style description language of an XML document describes the file showing various transformation rules, it is convenient. XSLT is language which describes transform processing of the document structure of an XML document.

[0012]

[Embodiment of the Invention] Hereafter, the operation gestalt of the existing system cooperation control unit concerning this invention is explained using a drawing. Drawing 1 is the whole existing system cooperation control unit 1 block diagram concerning this invention. The existing system cooperation control unit 1 receives the processing demand from a user, makes the existing information processing system 50a and 50b and -- cooperate, performs processing, and answers a user the result. Therefore, it has the flow control section 10 which performs logic which makes the external-system trunk connection equipments 40a and 40b connecting with the existing information processing system 50, --, two or more existing information processing system cooperate, and the user service control section 20 which bears an interface with a user.

[0013] 20 is the user service control section, and it serves to tell the processing result which the flow control section 10 obtained to the computer 8 and the local GUI means 30 of the remote place which is user-terminal equipment while changing the processing demand from a reception beam user into the processing demand described with the structured data from the graphical user interface (henceforth, GUI) means 30 with which the computer 8 of a remote place and the existing system cooperation control unit 1 were equipped and telling the flow control section 10. In addition, 51 and 52 are input units, such as local graphic display and a keyboard mouse, respectively.

[0014] User-terminal equipment may be the cellular-phone terminal which is not restricted to a computer and can constitute the existing system cooperation control device 1 and a data communication network 9. As means of communications required for carrier delivery of the data of the processing demand between the user service control section and a terminal unit, it is [0015] which can consider utilization of various network environments including the Internet. External-system trunk connection equipment (a following adapter and publication) 40 The existing application system 50a

which is developed independently, respectively and is working. The application using 50b and --, for example, specific database data. One of the applications which perform specific operation processing is supported, the application system which it takes charge of according to a reception beam actuation instruction from the flow control section 10 is driven, a result is carried out to the expression of a general-purpose notation, and it returns to the flow control section 10. It may exist on the computer by which it may exist on a computer with same adapter 40 and existing corresponding application system, and differs on one Local Area Network.

[0016] Drawing 2 is drawing having shown the structure of the user service control section 20 in the detail further. The user service control section 20 consists of a processing demand converter 21 and a processing result converter 22, and the processing result converter 22 performs required transform processing with reference to the conversion indexed file 23 and the processing result conversion file 24 chosen appropriately. Drawing 4 is a flow chart explaining the flow of the user service processing which the user service control section 20 performs. Hereafter, according to drawing 4, actuation of the user service control section 20 is explained.

[0017] First, the user service control section receives the data of a processing demand sent from an individual terminal unit. The data of a processing demand sent from a terminal unit are described by the notation of dedication depending on the specification of a terminal unit. The received data of a processing demand are passed to the processing demand converter 21, and are changed into the processing demand of a general-purpose notation (S21). The data of the processing demand expressed by the notation of dedication depending on the specification of a terminal unit are changed into the general-purpose notation doubled with this equipment. The function changed into a general-purpose notation from this exclusive notation is mounted in the form depending on the specification of a terminal unit.

[0018] The result of having changed the processing demand by the notation only for carrier beams into the processing demand of a general-purpose notation from there by the processing demand converter is indicated to be the image of the actuation screen of a terminal unit to (a) of drawing 5 R> 5, and (b), respectively. Although the description approach by the general-purpose notation of a processing demand does not carry out especially a convention, when the notation of XML is used, description in a form as shown in (b) of drawing 5 can be considered, for example. Users (individual) are the conditions "product classifications is daily needs" on the screen of a terminal unit, and drawing 5 (a) expresses the image at the time of searching goods. Drawing 5 (b) expresses the result from which the processing demand converter 21 changed into the

general-purpose notation the processing demand by the exclusive notation received from the terminal unit. The tag part surrounding "goods retrieval" in drawing and it is called "processing instruction", and tells that it is that with which this processing demand searches goods to the flow control section 10. The parts of "daily needs" and the tag surrounding it are carrying out the table of retrieval conditions being "product classifications is daily needs", respectively.

[0019] The data of the processing demand by the general-purpose notation generated at step S21 are sent to the below-mentioned flow control section 10 (S22). In the flow control section 10, according to this processing demand, various data processing (retrieval of the goods which agree on conditions here, and extract of inventory information) is performed, and, similarly that result is returned to the user service control section in the form of a general-purpose notation.

[0020] Reception and the processing result converter 22 are changed into the expression which doubled with the terminal unit the processing result as which the processing result converter 22 was expressed by the general-purpose notation in the form of a general-purpose notation in the result of the processing which the flow control section performed according to the content of the processing demand sent at step S21. Therefore, the processing result conversion file 24 applied to transform processing is chosen first (S23). Selection of the processing result conversion file 24 is performed according to the processing result of the received general-purpose notation, and the content of the conversion indexed file 23 prepared beforehand.

[0021] The processing result of a general-purpose notation and the content of the conversion indexed file 23 are shown in drawing 6. Although the description approach by the general-purpose notation of a processing result does not carry out especially a convention, when the notation of XML is used, description in a form as shown in (b) of drawing 6 can be considered, for example. The conversion indexed file 23 has taken the form of a CSV file shown in drawing 6 (a), and the character string of a processing instruction and the file name of the processing result conversion file 24 corresponding to it are described here. Conversion is performed to an exclusive notation according to the processing result conversion file corresponding to this processing instruction from the general-purpose notation of a processing result.

[0022] The processing result which the flow control section returns has the form where the result of the processing performed to the processing demand of the general-purpose notation which the user service control section of <request> </request> sent by the flow control section side of <responce> </response> was added, as shown in the part of drawing 6 R 6 (b). Even <product id ="00001"> </product> of the inside as a result of

the processing added by the flow control section side The trade name and price which express the information for one goods corresponding to retrieval conditions, and were taken out from the goods information database <name> </name> and whose <price> </price> are one of the existing information processing system <stocks> </stocks> expresses the number of inventories of goods taken out from the inventory control system which is one of the existing information processing system.

[0023] The processing result converter 22 makes the processing instruction in a processing result drawing, makes this a key, and the processing result conversion file 24 applied to a processing result is chosen (S23).

[0024] Next, the processing result converter 22 applies the processing result conversion file 24 chosen at step S23 to the processing result of the general-purpose notation received from the flow control section 10, and changes it into the processing result of the exclusive notation doubled with the specification of a user's terminal (S24). Here, it explains supposing the case where set a user's terminal into the WWW (World Wide Web) browser, and an exclusive notation is set to HTML (HyperText Markup Language). Although the description approach of the processing result conversion file 24 does not carry out especially a convention, when the notation of XSLT is used, description in a form as shown in drawing 7 R> 7 can be considered, for example. The slanting ** part in drawing means extracting the text data (bold letter part of drawing 6 (b)) of the part surrounded with the tag in the processing result of a general-purpose notation. According to the conversion rule described by the processing result conversion file of drawing 7, the result changed into the exclusive notation (HTML) of a terminal (WWW browser) is shown in drawing 8 to the processing result of the general-purpose notation of drawing 6 (b) of a front page. the part of the bold letter in drawing -- a result -- a conversion file (XSLT) -- according to description, it is data of a general-purpose notation (XML) extracted from the processing result. If the processing result of drawing 8 changed by the processing result converter is displayed by the WWW browser, it will become like drawing 9.

[0025] Drawing 3 is drawing having shown the structure of the flow control section 10 in the detail further. The processing flow selection section 11 which the flow control section 10 receives the processing demand from the user service control section 20, and chooses a suitable processing flow, According to the processing flow file 15 chosen appropriately, the structural transition file 16 is referred to if needed. Cooperation processing logic is performed and it consists of the processing flow activation section 12 which returns a processing result to the user service control section 20, and an adapter control section 13 which takes an interface with each adapter 40 for the existing information

processing system.

[0026] Drawing 10 is a flow chart explaining the flow of the flow control processing which the flow control section 10 performs. Hereafter, actuation of the flow control section 10 is explained according to drawing 10.

[0027] First, reception and the suitable processing flow file 15 are chosen for the processing demand described by the general-purpose notation from the user service control section 20 (S11). The processing flow selection section 11 in the flow control section actually receives a treatment demand. Selection of a processing flow is performed with reference to the processing flow indexed file 14. As for the processing flow indexed file 14, the character string of a processing instruction and the corresponding file name of a processing flow file are described by drawing 11 so that it may be shown. The processing flow selection section 11 chooses the processing flow file corresponding to the processing instruction which is in agreement with the value of the processing instruction in the processing demand of the general-purpose notation received from the user service control section 20 (character string inserted by <instruction> and </instruction>).

[0028] The procedure of what kind of processing to perform actually is described to the received processing demand by the processing flow file 15. Two or more processing flow files 15 are beforehand prepared corresponding to the class of processing instruction, and are connected with a actual processing demand by the processing flow indexed file 14 by using as a key the value of the processing instruction described during the processing demand.

[0029] The processing flow activation section 12 performs various processings to the processing demand which thought the processing demand by the general-purpose notation to be the processing flow file 15 chosen at step S11 according to reception and the procedure described in the selected processing flow file 15. According to the content of the processing flow file 15, following processing like 1-3 is performed actually.

1) In order to request processing from the adapter control section 13 (after-mentioned) which controls the adapter which performs agency with the existing system, generate a new processing demand (S131) and pass this to the adapter control section 13 (S132).

2) Generate a processing demand of as opposed to still more nearly another existing system for the adapter control section 13 to a processing result from a receipt and the received processing result (S131), and pass the adapter control section 13 again (S132).

3) Perform processing processing of merge, structural transition, etc. of the processing result received from the received processing demand or the adapter control section 13 if needed (S133).

[0030] Although especially the notation of a processing flow file is not specified, when the notation of XML is used, for example, it becomes like drawing 12. Each line of (1) in the processing flow of drawing 12 (5) is the part which described the content of the processing actually performed in the processing flow activation section 12. Hereafter, the content of the processing corresponding to each line is explained in order. In addition, "the goods information DB" and an "inventory control system" are the existing information processing system which the existing system cooperation control unit 1 makes cooperate.

[0031] (1): request description [of the processing to "the goods information DB"]: --
 <AdapterCtl name = -- "goods information DB" request = "! REUEST" -- result --
 ="prodlist.xml"/>- in this line, retrieval of delivery and goods information is requested for the processing demand received from the user service control section 20 to the "goods information DB" in the existing system connected to this equipment.

- actually, the content of description of this line is passed to the adapter control section 13 (after-mentioned), the adapter connected to "the goods information DB" there is chosen, a processing demand is performed in the selected adapter, and that processing result comes on the contrary.

The part of - "name =" goods information DB"" is the information for specifying the adapter which processes.

- "request = -- " -- ! -- REUEST -- " -- " -- " -- request -- = -- " -- " -- " -- an adapter -- a control section -- going -- an adapter -- sending -- having -- processing -- a demand -- specifying -- description -- it is -- usually -- " -- " -- " -- " -- a part -- processing -- a demand -- having stored -- a file -- a file name -- describing -- having -- although -- When described as "!"REUEST", the processing demand sent to an adapter expresses what the flow control section receives from the user service control section first via the adapter control section 13.

- "result = -- " -- prodlist . -- xml -- " -- " -- " -- result -- = -- " -- " -- " -- an adapter -- a control section -- going -- on the contrary -- coming -- an adapter -- depending -- processing -- a result -- storing -- the point -- a file -- specifying -- description -- it is -- " -- " -- " -- " -- a part -- describing -- having had -- a file name -- specifying -- having had -- a file -- an adapter -- depending -- processing -- a result -- storing -- having .

- the content of the processing result (prodlist.xml) thought to be the processing demand (! -- REUEST) sent to an adapter control section by description of this line from an adapter control section is shown in drawing 13 (a) and (b).

The processing demand (!REUEST) sent to the adapter control section of - drawing 13 (a) is the same content as the processing demand which the user service control section

of drawing 5 (b) generates.

The result (a trade name, price) of having retrieved "the goods information DB" is stored in the processing result received from the adapter control section of - drawing 13 (b) on the conditions of "daily needs."

[0032] (2): generation description [of the processing demand sent to an "inventory control system"]: -- <Convert in= -- "prodlist.xml"out = " reqstocks.xml" -- xslt="tostock.xml"/>- this line describes generating a new processing demand, in order to ask the "inventory control system" in the existing system connected to this equipment the inventory information on the goods contained in the retrieval result of drawing 13 (b).

<Convert- in - line -- "-- the rule described by the file specified by xslt= "and"" -- following -- "-- the file specified by in= "and"" -- "-- it means changing into the file specified by out = "and"."

- the goods retrieval result obtained by (1) of the point here -- "prodlist.xml" -- a XSLT file -- it means storing in file"reqstocks.xml the result changed according to the content of "tostock.xml."

- drawing 14 -- ((a --)) -- ((b --)) -- conversion -- a rule -- having described -- XSLT -- a file -- " -- tostock . -- xsl -- " -- conversion -- a result -- " -- reqstocks . -- xml -- " -- the content -- being shown .

As shown in - drawing 14 (b), the goods information (drawing 13 (b)) received from "the goods information DB" is changed into the processing demand for the inventory inquiry to an "inventory control system" by applying the conversion rule of drawing 14 (a).

[0033] (3): request description [of the processing to an "inventory control system"]: -- <AdapterCtl name =" -- inventory control system "request=" reqstocks.xml"result = -- "stocklist.xml"/>- in this line, acquisition of the inventory information on delivery and goods has been requested for the processing demand for the inventory inquiry generated by (2) of the point by the "inventory control system" which is one of the existing systems connected to this equipment.

- actually, the content of description of this line is passed to the adapter control section 13 (after-mentioned), the adapter connected to the existing system there is chosen, a processing demand is performed in the selected adapter, and that processing result comes on the contrary.

The part of - "name =" inventory control system"" is the information for specifying the adapter which processes.

- "-- request -- = -- " -- reqstocks . -- xml -- " -- " -- "-- request -- = -- " -- " -- " -- an adapter -- a control section -- 13 -- going -- an adapter -- sending -- having -- processing -- a demand

-- specifying -- description -- it is -- "-- " -- " -- " -- a part -- a file name -- specifying -- having had -- a file -- the content -- an adapter -- a control section -- 13 -- going -- an adapter -- sending -- having .

- "-- result -- = -- " -- stocklist . -- xml -- " -- " -- "-- result -- = -- " -- " -- " -- an adapter -- a control section -- going -- on the contrary -- coming -- an adapter -- depending -- processing -- a result -- storing -- the point -- a file -- specifying -- description -- it is -- "-- " -- " -- " -- a part -- describing -- having had -- a file name -- specifying -- having had -- a file -- an adapter -- depending -- processing -- a result -- storing -- having .

- the content of the processing result (stocklist.xml) received from the adapter control section 13 by description of this line is shown in drawing 15 .

[0034] Merge description of goods information and inventory information : (4): <Merge in1= "prodlist.xml" in2 = -- "stocklist.xml" out = "marged.xml"unit = "product" key = "@id" -- /- > - in this line In order to generate the final processing result for returning to the user service control section 20, it means summarizing the retrieval result (drawing 13 (b)) of the "goods information DB" acquired by (2), and the inventory information on the "inventory control system" obtained by (3) to one.

<Merge in - line -- "-- in1= "and"" -- "-- the result of having summarized the file specified by in2= "and"" to one -- "-- it means storing in the file specified by out = "and".

- the result of having summarized file "file which stored prodlist.xml" and inventory information" stocklist.xml" which stored goods information here -- a file -- it means storing in "marged.xml."

- "-- unit = -- "." -- in case key = "and"" summarize two files, it is description for specifying how the data in a file are compared, and means comparing element "product" of two files with the value of attribute "id" here.

- two -- a ** -- a file -- " -- prodlist . -- xml -- " -- " -- stocklist . -- xml -- " -- having collected -- a result -- having stored -- a file -- " -- marged . -- xml -- " -- the content -- drawing 16 -- being shown .

- this file -- "marged.xml" brings a processing result eventually returned to the user service control section (the content is the same as drawing 6 (b)).

[0035] (5): description:<Return result = "marged.xml"/>- which returns a processing result -- this line -- "-- mean returning the content of the file specified by result xml = "and"" to the user service control section 20.

- therefore -- here -- **** -- (-- four --) -- goods -- information -- an inventory -- information -- one -- a ** -- having collected -- a result -- having stored -- a file -- " -- marged . -- xml -- " -- the content -- a flow control -- the section -- ten -- processing -- a result -- ***** -- a user -- service control -- the section -- 20 -- returning -- having .

[0036] Work of the adapter control section 13 is explained. The adapter control section 13 is publishing to the adapter which chose the suitable adapter 40 from the carrier beam processing demand statement from the processing flow activation section 12, and chose the processing demand statement. processing -- a flow -- activation -- the section -- 12 -- having published -- processing -- a demand -- a statement -- < -- AdapterCtl name -- = -- " -- an adapter -- a name -- " -- request -- = -- " -- processing -- a demand -- storing -- having had -- a file -- " -- result -- = -- " -- processing -- a result -- storing -- having had -- a file -- " -- /-- > -- from -- "-- name -- = -- " -- an adapter -- a name -- " -- " -- a key -- ** -- carrying out -- corresponding -- existing -- a system -- connecting -- having -- **** -- an adapter -- 40 -- choosing . an adapter -- selection -- beforehand -- preparing -- having had -- an adapter -- an indexed file -- 17 -- inside -- from -- the above -- processing -- a flow -- description -- inside -- "-- name -- = -- " -- an adapter -- a name -- " -- " -- corresponding -- an adapter -- a module name -- acquiring -- things -- carrying out -- having . [0037] which shows the example of the adapter indexed file 17 to drawing 17 the result which the adapter 40 processed -- processing demand statement <AdapterCtl name = -- "an adapter name" -- request= --/"in which the file "result =" processing result in which the processing demand was stored was stored" -- > -- inside -- "-- it is stored in the file specified by result = "and"" by the adapter.

[0038] A processing result is returned (S16). According to the description <Return result = "file in which processing result was stored"/> in the processing flow which the processing flow activation section performs, the content of the file specified by "result = "and"" is returned to the user service control section 20.

[0039] Next, the detail of external-system trunk connection equipment (adapter) 40 is explained. Drawing 18 is the detail block diagram of an adapter 40. An adapter 40 is equipped with the conversion file 47 and the conversion indexed file 48 as a result of the processing demand conversion activation section 41, the processing result converter 42, the XSLT processing engine 13, and the processing demand conversion file 46.

[0040] The processing demand conversion activation section 41 changes the processing demand described by the general-purpose notation into the exclusive demand for accessing the actual existing information processing system, and publishes this. The processing demand conversion file 46 is a file which indicated the conversion procedure used in the case of the conversion.

[0041] The processing result converter 42 changes a carrier beam processing result into the access result described by the general-purpose notation from the existing information processing system, and returns it to the flow control section 10. The result conversion file 47 is a file which indicated the conversion procedure used in the case of

the conversion.

[0042] With this operation gestalt, the conversion file 17 shall be written by XSLT as a result of the inquiry conversion file 16. The XSLT processing engine 13 is an interpreter which interprets the notation rule of XSLT, and performs document structural transition according to the conversion file 17 as a result of the inquiry conversion file 16 described by XSLT in the data written by the general-purpose notation. It is realizable using marketing or XSLT processing software available gratuitously.

[0043] The conversion indexed file 48 is an index table required in order to choose the conversion file 47 to the processing demand described by the general-purpose notation emitted from the flow control section 10 as a result of the suitable processing demand conversion file 46.

[0044] Drawing 25 is a flow chart explaining actuation of the existing system communication processing which an adapter 40 performs. Hereafter, actuation of an adapter 40 is explained according to drawing 25.

[0045] First, an adapter receives the processing demand by the general-purpose notation sent from the flow control section. The processing demand conversion activation section 41 in an adapter 40 actually receives a treatment demand. And with reference to a conversion indexed file, the processing demand conversion file corresponding to the value of the processing instruction in the processing demand (drawing 13 (a), drawing 14 (b)) of a general-purpose notation is chosen (S41). Drawing 19 shows an example of a conversion indexed file. The file name of the string name of a processing instruction, a corresponding processing demand conversion file, and a processing result conversion file (after-mentioned) is described by drawing 19 so that it may be shown. A processing demand conversion file (plurality) and a processing result conversion file (plurality), and a conversion indexed file are prepared for each adapter (the object for the goods information DB, for inventory control systems) of every, respectively.

[0046] Next, it changes into the processing demand of the exclusive notation which doubled the processing demand of the general-purpose notation received at step S41 with the existing system which the adapter 40 has connected according to the content of the selected processing demand conversion file (S42). For example, it assumes that the "goods information DB" which is one of the existing systems is a relational database, and when the table of the goods information stored there is having structure like drawing 20, the processing demand of the exclusive notation to "the goods information DB" becomes an SQL sentence for taking out required information from this table. The rule for changing the processing demand (10-page drawing 13 (a)) of a general-purpose

notation into the SQL sentence compared with the structure of this table is described by the selected processing demand conversion file. Although especially the description approach of a conversion rule is not specified, when the notation of XSLT is used, for example, the notation in a form as shown in drawing 21 can be considered. It is select if the processing demand (10-page drawing 13 (a)) of a general-purpose notation is changed according to the content of the processing demand conversion file of a front page. Goods ID, a trade name, and price from Goods table where Classification It is changed into the SQL sentence which is the processing demand only for "the goods information DB" of the form of '=' daily-needs'.

[0047] The processing demand (SQL sentence) by the notation only for the existing systems generated at the above-mentioned step S42 is performed (S43). If this SQL sentence is performed to the goods information table of front page drawing 20 , the result of drawing 22 will be obtained.

[0048] If the processing result of the existing system connected to the adapter is received, an adapter 40 will choose the conversion file 47, as a result of corresponding to the value of the processing instruction in the processing demand first received from the flow control section 10 with reference to the conversion indexed file 48 the same with having carried out at step S41 (S44).

[0049] As a result of choosing at step S44, the rule for changing into the processing result by the general-purpose notation the processing result of the structure depending on the existing system "the goods information DB" shown in drawing 22 is described by the conversion file 47. Although especially the description approach of a conversion rule is not specified, when the notation of XSLT is used, for example, the notation in a form as shown in drawing 23 can be considered. According to the content of this processing result conversion file, the activation result of the SQL sentence of drawing 2222 is changed into the activation result display of a general-purpose notation (S45). Then, the processing result by the general-purpose notation shown in drawing 24 is obtained. This is answered to the flow control section 10 (S46). Although the flow of processing within an adapter 40 in which it explained here makes an example "goods information DB" (RDB) which is one of the existing systems, it is said of the flow of processing within the adapter 40 connected to the inventory control system which is another existing system. [of the same]

[0050] As mentioned above, according to the existing system cooperation control unit 1 explained in detail, when the flow of processing of a cooperation processing flow is changed and added, it is not necessary to rewrite the control program of the flow control section 10 that what is necessary is just to change and add the processing flow indexed

file 14 and the processing flow file 15.

[0051] Moreover, when the specification of the existing information processing system connected to the existing system cooperation control unit 1 is changed, it can respond only by carrying out the modification addition of the conversion file 47 as a result of the conversion indexed file 48 used within the adapter connected to the existing system, and the processing demand conversion file 46, and it is not necessary to change the control program of an adapter 40.

[0052] Moreover, what is necessary is just to change the processing demand converter 21 of user service control circles, and the processing result conversion file 24, when it corresponds to the new user client equipment connected to the existing system cooperation control unit 1 and the user interface of ** is changed.

[0053]

[Effect of the Invention] The existing information processor which was designed independently, respectively and was developed can be integrated at the minimum cost, and it can be made to work as compound information processing system which performs more complicated processing by taking the configuration of the existing system cooperation control unit 1 concerning this invention, as explained in detail above. And the maintenance cost which a functional addition, modification, etc. after integrating take can be made as small as possible.

TECHNICAL FIELD

[Field of the Invention] It is related with the equipment using the system control technique or such a technique of making two or more information processing system developed independently cooperating.

PRIOR ART

[Description of the Prior Art] In order to perform cooperation between the systems developed independently respectively, the format for having a dialog with systems conventionally was fixed uniquely, and the program modification and the addition which followed the agreement for every system were performed. The system is conventionally built and employed for every single enterprise or single operation. In recent years, the opportunity to cooperate the existing system between enterprises and

between operation, and offer new service by change of an operation gestalt, the spread of network, etc., is increasing. In realizing cooperation between such systems conventionally, for every system, the approach of a processing demand or transfer of data was decided uniquely, and was developed, and a subsequent escape and subsequent modification were seldom taken into consideration.

EFFECT OF THE INVENTION

[Effect of the Invention] The existing information processor which was designed independently, respectively and was developed can be integrated at the minimum cost, and it can be made to work as compound information processing system which performs more complicated processing by taking the configuration of the existing system cooperation control unit 1 concerning this invention, as explained in detail above. And the maintenance cost which a functional addition, modification, etc. after integrating take can be made as small as possible.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the above conventional system cooperation technique, the development time and cost of all systems -- program modification occurs -- had started enormously to change the case where he wants to add the system which newly cooperates from using a format of original switched data, and performing the program correction doubled with the exchange data format, and the flow of processing between the system.

[0004] Let it be a technical problem to offer the existing system cooperation control unit which enables it to devise this invention in consideration of the trouble of such a conventional technique, and to make as small as possible the integration cost at the time of building the integration system which made them cooperate from the system which was designed independently, was developed and has been respectively employed in the enterprise or the category, and the maintenance cost after integrating.

MEANS

[Means for Solving the Problem] Then, this invention is equipped with the user service control section, the flow control section, and one or more external-system trunk connection equipments. It is the existing system cooperation control device which the existing information processing system is made to cooperate and is operated. Said user service control section While changing the processing demand from a user into the format described by the general-purpose notation and passing said flow control section It is what changes into the format which suited the receipt in the processing result described by the general-purpose notation from the flow control section, and suited a user's client equipment in this, and is returned to a user. Said flow control section Interpret the processing demand described by the general-purpose notation, and processing ***** required for each external-system trunk connection equipment connecting with the existing information processing system is published in suitable sequence. It is what creates the processing result which performed a receipt and required data conversion for those processing results, collected this, and was eventually described by the general-purpose notation, and is returned to the user service control section. As opposed to the existing information processing system which takes charge of the processing demand which said external-system trunk connection equipment is designed and prepared for every existing information processing system, and was described by the general-purpose notation according to a receipt and this It is what publishes the processing demand of a format depending on the system, describes the obtained result by the general-purpose notation, and is returned to said flow control section. By exchanging the information these components were described to be by the general-purpose notation Let it be a summary to solve the above-mentioned technical problem with the existing system cooperation control unit which makes it possible to realize simply compound information processing system which two or more existing information processing system is made to cooperate, and performs more complicated cooperation processing actuation.

[0006] One of the desirable embodiments of this invention is the existing system cooperation control unit equipped with two or more processing flow files which said flow control section operates according to the processing flow file which defined the operations sequence for meeting the given processing demand, and embraced the class of processing demand. By separating the processing flow file which describes the procedure of an engine part and a processing flow of performing a processing flow, it can respond now to modification of a processing flow flexibly. Moreover, when a fixed regulation is needed for the description approach of a processing flow file, it becomes possible to describe cooperation actuation of the existing information processing system

systematically as a result.

[0007] In order to realize said embodiment, more specifically The processing flow selection section which chooses a suitable processing flow file from the processing demand to which said flow control section was given from the user service control section, The processing flow activation section which interprets the selected processing flow file, and publishes a required processing demand, or performs data conversion, and returns the obtained result to the user service control section, It is desirable to choose suitable external-system trunk connection equipment, and to constitute so that it may have the adapter control section which transmits the processing demand which said processing flow activation section published there.

[0008] One of the desirable embodiments of this invention said user service control section The processing demand converter which changes the processing demand from a user into the processing demand described by the general-purpose notation, The processing result converter which changes the processing result returned from said flow control section into the data format doubled with a user's client equipment according to the content of the processing result conversion file which described the processing result transformation rule prepared beforehand, since -- it is the constituted existing system cooperation control unit. It becomes possible to realize the response to various user client equipments flexibly by making transformation rule separate from

transform-processing logic in the form of a processing result conversion file.

[0009] One of the desirable embodiments of this invention said external-system trunk connection equipment The processing demand conversion file which defined the transformation rule for changing into the processing demand which depends for the given processing demand on the existing system which it takes charge of, It is the existing system cooperation control unit constituted so that it may have a conversion file as a result of defining the transformation rule for describing the processing result obtained from this existing system by the general-purpose notation, and required conversion might be performed with reference to these files and trunk connection with the existing system might be performed. It becomes possible to realize flexibly the response to various existing information processing system by making transformation rule separate from transform-processing logic in the form of a conversion file as a result of a processing demand conversion file.

[0010] It is desirable to perform description of the general-purpose notation of the processing demand which the existing system cooperation control unit of the invention in this application treats, and a processing result, and description of said processing flow file by the structured language with a tag. Generally a processing demand and the

expression of a processing result are because it has a certain structure. Moreover, it is because it is easy to describe various kinds of transformation rules. Especially, XML (eXtensible Markup Language) which is one of the criteria of a tagging structured statement document description language can be used. Since the Internet technique and compatibility, such as a WWW browser, are high, as for XML, it is more desirable to use XML in the existing system cooperation control unit of this invention.

[0011] When using XML as a structured data expression, when XSLT (XLS Translator) which is the subset of XSL (eXtensible Stylesheet Language) which is the style description language of an XML document describes the file showing various transformation rules, it is convenient. XSLT is language which describes transform processing of the document structure of an XML document.

[0012]

[Embodiment of the Invention] Hereafter, the operation gestalt of the existing system cooperation control unit concerning this invention is explained using a drawing.

Drawing 1 is the whole existing system cooperation control unit 1 block diagram concerning this invention. The existing system cooperation control unit 1 receives the processing demand from a user, makes the existing information processing system 50a and 50b and -- cooperate, performs processing, and answers a user the result. Therefore, it has the flow control section 10 which performs logic which makes the external-system trunk connection equipments 40a and 40b connecting with the existing information processing system 50, --, two or more existing information processing system cooperate, and the user service control section 20 which bears an interface with a user.

[0013] 20 is the user service control section, and it serves to tell the processing result which the flow control section 10 obtained to the computer 8 and the local GUI means 30 of the remote place which is user-terminal equipment while changing the processing demand from a reception beam user into the processing demand described with the structured data from the graphical user interface (henceforth, GUI) means 30 with which the computer 8 of a remote place and the existing system cooperation control unit 1 were equipped and telling the flow control section 10. In addition, 51 and 52 are input units, such as local graphic display and a keyboard mouse, respectively.

[0014] User-terminal equipment may be the cellular-phone terminal which is not restricted to a computer and can constitute the existing system cooperation control device 1 and a data communication network 9. As means of communications required for carrier delivery of the data of the processing demand between the user service control section and a terminal unit, it is [0015] which can consider utilization of various network environments including the Internet. External-system trunk connection

equipment (a following adapter and publication) 40 The existing application system 50a which is developed independently, respectively and is working, The application using 50b and --, for example, specific database data, One of the applications which perform specific operation processing is supported, the application system which it takes charge of according to a reception beam actuation instruction from the flow control section 10 is driven, a result is carried out to the expression of a general-purpose notation, and it returns to the flow control section 10. It may exist on the computer by which it may exist on a computer with same adapter 40 and existing corresponding application system, and differs on one Local Area Network.

[0016] Drawing 2 is drawing having shown the structure of the user service control section 20 in the detail further. The user service control section 20 consists of a processing demand converter 21 and a processing result converter 22, and the processing result converter 22 performs required transform processing with reference to the conversion indexed file 23 and the processing result conversion file 24 chosen appropriately. Drawing 4 is a flow chart explaining the flow of the user service processing which the user service control section 20 performs. Hereafter, according to drawing 4, actuation of the user service control section 20 is explained.

[0017] First, the user service control section receives the data of a processing demand sent from an individual terminal unit. The data of a processing demand sent from a terminal unit are described by the notation of dedication depending on the specification of a terminal unit. The received data of a processing demand are passed to the processing demand converter 21, and are changed into the processing demand of a general-purpose notation (S21). The data of the processing demand expressed by the notation of dedication depending on the specification of a terminal unit are changed into the general-purpose notation doubled with this equipment. The function changed into a general-purpose notation from this exclusive notation is mounted in the form depending on the specification of a terminal unit.

[0018] The result of having changed the processing demand by the notation only for carrier beams into the processing demand of a general-purpose notation from there by the processing demand converter is indicated to be the image of the actuation screen of a terminal unit to (a) of drawing 5 R> 5, and (b), respectively. Although the description approach by the general-purpose notation of a processing demand does not carry out especially a convention, when the notation of XML is used, description in a form as shown in (b) of drawing 5 can be considered, for example. Users (individual) are the conditions "product classifications is daily needs" on the screen of a terminal unit, and drawing 5 (a) expresses the image at the time of searching goods. Drawing 5 (b)

expresses the result from which the processing demand converter 21 changed into the general-purpose notation the processing demand by the exclusive notation received from the terminal unit. The tag part surrounding "goods retrieval" in drawing and it is called "processing instruction", and tells that it is that with which this processing demand searches goods to the flow control section 10. The parts of "daily needs" and the tag surrounding it are carrying out the table of retrieval conditions being "product classifications is daily needs", respectively.

[0019] The data of the processing demand by the general-purpose notation generated at step S21 are sent to the below-mentioned flow control section 10 (S22). In the flow control section 10, according to this processing demand, various data processing (retrieval of the goods which agree on conditions here, and extract of inventory information) is performed, and, similarly that result is returned to the user service control section in the form of a general-purpose notation.

[0020] Reception and the processing result converter 22 are changed into the expression which doubled with the terminal unit the processing result as which the processing result converter 22 was expressed by the general-purpose notation in the form of a general-purpose notation in the result of the processing which the flow control section performed according to the content of the processing demand sent at step S21.

Therefore, the processing result conversion file 24 applied to transform processing is chosen first (S23). Selection of the processing result conversion file 24 is performed according to the processing result of the received general-purpose notation, and the content of the conversion indexed file 23 prepared beforehand.

[0021] The processing result of a general-purpose notation and the content of the conversion indexed file 23 are shown in drawing 6. Although the description approach by the general-purpose notation of a processing result does not carry out especially a convention, when the notation of XML is used, description in a form as shown in (b) of drawing 6 can be considered, for example. The conversion indexed file 23 has taken the form of a CSV file shown in drawing 6 (a), and the character string of a processing instruction and the file name of the processing result conversion file 24 corresponding to it are described here. Conversion is performed to an exclusive notation according to the processing result conversion file corresponding to this processing instruction from the general-purpose notation of a processing result.

[0022] The processing result which the flow control section returns has the form where the result of the processing performed to the processing demand of the general-purpose notation which the user service control section of <request> </request> sent by the flow control section side of <responce> </response> was added, as shown in the part of

drawing 6 R 6 (b). Even `<product id ="00001"> · </product>` of the inside as a result of the processing added by the flow control section side The trade name and price which express the information for one goods corresponding to retrieval conditions, and were taken out from the goods information database `<name>· </name>` and whose `<price>· </price>` are one of the existing information processing system `<stocks>· </stocks>` expresses the number of inventories of goods taken out from the inventory control system which is one of the existing information processing system.

[0023] The processing result converter 22 makes the processing instruction in a processing result drawing, makes this a key, and the processing result conversion file 24 applied to a processing result is chosen (S23).

[0024] Next, the processing result converter 22 applies the processing result conversion file 24 chosen at step S23 to the processing result of the general-purpose notation received from the flow control section 10, and changes it into the processing result of the exclusive notation doubled with the specification of a user's terminal (S24). Here, it explains supposing the case where set a user's terminal into the WWW (World Wide Web) browser, and an exclusive notation is set to HTML (HyperText Markup Language). Although the description approach of the processing result conversion file 24 does not carry out especially a convention, when the notation of XSLT is used, description in a form as shown in drawing 7 R 7 can be considered, for example. The slanting ** part in drawing means extracting the text data (bold letter part of drawing 6 (b)) of the part surrounded with the tag in the processing result of a general-purpose notation.

According to the conversion rule described by the processing result conversion file of drawing 7 , the result changed into the exclusive notation (HTML) of a terminal (WWW browser) is shown in drawing 8 to the processing result of the general-purpose notation of drawing 6 (b) of a front page. the part of the bold letter in drawing -- a result -- a conversion file (XSLT) -- according to description, it is data of a general-purpose notation (XML) extracted from the processing result. If the processing result of drawing 8 changed by the processing result converter is displayed by the WWW browser, it will become like drawing 9 .

[0025] Drawing 3 is drawing having shown the structure of the flow control section 10 in the detail further. The processing flow selection section 11 which the flow control section 10 receives the processing demand from the user service control section 20, and chooses a suitable processing flow, According to the processing flow file 15 chosen appropriately, the structural transition file 16 is referred to if needed. Cooperation processing logic is performed and it consists of the processing flow activation section 12 which returns a processing result to the user service control section 20, and an adapter control section

13 which takes an interface with each adapter 40 for the existing information processing system.

[0026] Drawing 10 is a flow chart explaining the flow of the flow control processing which the flow control section 10 performs. Hereafter, actuation of the flow control section 10 is explained according to drawing 10.

[0027] First, reception and the suitable processing flow file 15 are chosen for the processing demand described by the general-purpose notation from the user service control section 20 (S11). The processing flow selection section 11 in the flow control section actually receives a treatment demand. Selection of a processing flow is performed with reference to the processing flow indexed file 14. As for the processing flow indexed file 14, the character string of a processing instruction and the corresponding file name of a processing flow file are described by drawing 11 so that it may be shown. The processing flow selection section 11 chooses the processing flow file corresponding to the processing instruction which is in agreement with the value of the processing instruction in the processing demand of the general-purpose notation received from the user service control section 20 (character string inserted by <instruction> and </instruction>).

[0028] The procedure of what kind of processing to perform actually is described to the received processing demand by the processing flow file 15. Two or more processing flow files 15 are beforehand prepared corresponding to the class of processing instruction, and are connected with a actual processing demand by the processing flow indexed file 14 by using as a key the value of the processing instruction described during the processing demand.

[0029] The processing flow activation section 12 performs various processings to the processing demand which thought the processing demand by the general-purpose notation to be the processing flow file 15 chosen at step S11 according to reception and the procedure described in the selected processing flow file 15. According to the content of the processing flow file 15, following processing like 1-3 is performed actually.

- 1) In order to request processing from the adapter control section 13 (after-mentioned) which controls the adapter which performs agency with the existing system, generate a new processing demand (S131) and pass this to the adapter control section 13 (S132).
- 2) Generate a processing demand of as opposed to still more nearly another existing system for the adapter control section 13 to a processing result from a receipt and the received processing result (S131), and pass the adapter control section 13 again (S132).
- 3) Perform processing processing of merge, structural transition, etc. of the processing result received from the received processing demand or the adapter control section 13 if

needed (S133).

[0030] Although especially the notation of a processing flow file is not specified, when the notation of XML is used, for example, it becomes like drawing 12. Each line of (1) in the processing flow of drawing 12 (5) is the part which described the content of the processing actually performed in the processing flow activation section 12. Hereafter, the content of the processing corresponding to each line is explained in order. In addition, "the goods information DB" and an "inventory control system" are the existing information processing system which the existing system cooperation control unit 1 makes cooperate.

[0031] (1): request description [of the processing to "the goods information DB"]: --

<AdapterCtl name = -- "goods information DB" request = "! REUEST" -- result --
= "prodlist.xml"/> in this line, retrieval of delivery and goods information is requested for the processing demand received from the user service control section 20 to the "goods information DB" in the existing system connected to this equipment.

· actually, the content of description of this line is passed to the adapter control section 13 (after-mentioned), the adapter connected to "the goods information DB" there is chosen, a processing demand is performed in the selected adapter, and that processing result comes on the contrary.

The part of · "name = " goods information DB"" is the information for specifying the adapter which processes.

· "request = -- " ! -- REUEST -- " -- " -- " request -- = -- " -- " -- " -- an adapter -- a control section -- going -- an adapter -- sending -- having -- processing -- a demand -- specifying -- description -- it is -- usually -- " -- " -- " -- " a part -- processing -- a demand -- having stored -- a file -- a file name -- describing -- having -- although -- When described as ""!REUEST"", the processing demand sent to an adapter expresses what the flow control section receives from the user service control section first via the adapter control section 13.

· "result = -- " -- prodlist . -- xml -- " -- " -- " result -- = -- " -- " -- " -- an adapter -- a control section -- going -- on the contrary -- coming -- an adapter -- depending -- processing -- a result -- storing -- the point -- a file -- specifying -- description -- it is -- " -- " -- " -- " a part -- describing -- having had -- a file name -- specifying -- having had -- a file -- an adapter -- depending -- processing -- a result -- storing -- having .

· the content of the processing result (prodlist.xml) thought to be the processing demand (! -- REUEST) sent to an adapter control section by description of this line from an adapter control section is shown in drawing 13 (a) and (b).

The processing demand (!REUEST) sent to the adapter control section of · drawing 13

(a) is the same content as the processing demand which the user service control section of drawing 5 (b) generates.

The result (a trade name, price) of having retrieved "the goods information DB" is stored in the processing result received from the adapter control section of drawing 13 (b) on the conditions of "daily needs."

[0032] (2): generation description [of the processing demand sent to an "inventory control system"]: -- <Convert in= -- "prodlist.xml"out = " reqstocks.xml" --

xslt="tostock.xsl"/>- this line describes generating a new processing demand, in order to ask the "inventory control system" in the existing system connected to this equipment the inventory information on the goods contained in the retrieval result of drawing 13 (b).

<Convert in line -- " -- the rule described by the file specified by xslt= "and" -- following -- " -- the file specified by in= "and" -- " -- it means changing into the file specified by out = "and".

- the goods retrieval result obtained by (1) of the point here -- "prodlist.xml" -- a XSLT file -- it means storing in file"reqstocks.xml" the result changed according to the content of "tostock.xsl."

- drawing 14 -- (-- a --) -- (-- b --) -- conversion -- a rule -- having described -- XSLT -- a file -- " -- tostock . -- xsl -- " -- conversion -- a result -- " -- reqstocks . -- xml -- " -- the content -- being shown .

As shown in drawing 14 (b), the goods information (drawing 13 (b)) received from "the goods information DB" is changed into the processing demand for the inventory inquiry to an "inventory control system" by applying the conversion rule of drawing 14 (a).

[0033] (3): request description [of the processing to an "inventory control system"]: --

<AdapterCtl name = " -- inventory control system "request=" reqstocks.xml"result = --

"stocklist.xml"/>- in this line, acquisition of the inventory information on delivery and goods has been requested for the processing demand for the inventory inquiry generated by (2) of the point by the "inventory control system" which is one of the existing systems connected to this equipment.

- actually, the content of description of this line is passed to the adapter control section 13 (after-mentioned), the adapter connected to the existing system there is chosen, a processing demand is performed in the selected adapter, and that processing result comes on the contrary.

The part of "name =" inventory control system"" is the information for specifying the adapter which processes.

- " -- request -- = -- " -- reqstocks . -- xml -- " -- " -- " -- request -- = -- " -- " -- " -- an adapter --

a control section -- 13 -- going -- an adapter -- sending -- having -- processing -- a demand -- specifying -- description -- it is -- " " " " " -- a part -- a file name -- specifying -- having had -- a file -- the content -- an adapter -- a control section -- 13 -- going -- an adapter -- sending -- having .

- " result -- = -- " -- stocklist . -- xml -- " " " " " result -- = -- " " " " " -- an adapter -- a control section -- going -- on the contrary -- coming -- an adapter -- depending -- processing -- a result -- storing -- the point -- a file -- specifying -- description -- it is -- " " " " " -- a part -- describing -- having had -- a file name -- specifying -- having had -- a file -- an adapter -- depending -- processing -- a result -- storing -- having .

- the content of the processing result (stocklist.xml) received from the adapter control section 13 by description of this line is shown in drawing 15 .

[0034] Merge description of goods information and inventory information : (4): <Merge in1="prodlist.xml" in2= "stocklist.xml" out="marged.xml" unit="product" key="@id" -- /- > - in this line In order to generate the final processing result for returning to the user service control section 20, it means summarizing the retrieval result (drawing 13 (b)) of the "goods information DB" acquired by (2), and the inventory information on the "inventory control system" obtained by (3) to one.

<Merge in - line -- " in1="and"" -- " the result of having summarized the file specified by in2="and"" to one -- " it means storing in the file specified by out="and". - the result of having summarized file "file which stored prodlist.xml" and inventory information" stocklist.xml" which stored goods information here -- a file -- it means storing in "marged.xml."

- " unit = -- " " " -- in case key = "and"" summarize two files, it is description for specifying how the data in a file are compared, and means comparing element "product" of two files with the value of attribute "id" here.

- two -- a ** -- a file -- " -- prodlist . -- xml -- " " " stocklist . -- xml -- " -- having collected -- a result -- having stored -- a file -- " -- marged . -- xml -- " -- the content -- drawing 16 -- being shown .

- this file -- "marged.xml" brings a processing result eventually returned to the user service control section (the content is the same as drawing 6 (b)).

[0035] (5): description:<Return result="marged.xml"/>- which returns a processing result -- this line -- " -- mean returning the content of the file specified by result xml = "and"" to the user service control section 20.

- therefore -- here -- **** -- (-- four --) -- goods -- information -- an inventory -- information -- one -- a ** -- having collected -- a result -- having stored -- a file -- " -- marged . -- xml -- " -- the content -- a flow control -- the section -- ten -- processing -- a

result -- ***** -- a user -- service control -- the section -- 20 -- returning -- having .

[0036] Work of the adapter control section 13 is explained. The adapter control section 13 is publishing to the adapter which chose the suitable adapter 40 from the carrier beam processing demand statement from the processing flow activation section 12, and chose the processing demand statement. processing -- a flow -- activation -- the section -- 12 -- having published -- processing -- a demand -- a statement -- < -- AdapterCtl name -- = -- " -- an adapter -- a name -- " -- request -- = -- " -- processing -- a demand -- storing -- having had -- a file -- " -- result -- = -- " -- processing -- a result -- storing -- having had -- a file -- " -- /-- > -- from -- "-- name -- = -- " -- an adapter -- a name -- " -- " -- a key -- ** -- carrying out -- corresponding -- existing -- a system -- connecting -- having -- **** -- an adapter -- 40 -- choosing . an adapter -- selection -- beforehand -- preparing -- having had -- an adapter -- an indexed file -- 17 -- inside -- from -- the above -- processing -- a flow -- description -- inside -- "-- name -- = -- " -- an adapter -- a name -- " -- " -- corresponding -- an adapter -- a module name -- acquiring -- things -- carrying out -- having . [0037]

which shows the example of the adapter indexed file 17 to drawing 17 the result which the adapter 40 processed -- processing demand statement <AdapterCtl name = -- "an adapter name" -- request= --/" in which the file "result =" processing result in which the processing demand was stored was stored" -- > -- inside -- "-- it is stored in the file specified by result = "and"" by the adapter.

[0038] A processing result is returned (S16). According to the description <Return result = "file in which processing result was stored"/> in the processing flow which the processing flow activation section performs, the content of the file specified by "result = "and"" is returned to the user service control section 20.

[0039] Next, the detail of external-system trunk connection equipment (adapter) 40 is explained. Drawing 18 is the detail block diagram of an adapter 40. An adapter 40 is equipped with the conversion file 47 and the conversion indexed file 48 as a result of the processing demand conversion activation section 41, the processing result converter 42, the XSLT processing engine 13, and the processing demand conversion file 46.

[0040] The processing demand conversion activation section 41 changes the processing demand described by the general-purpose notation into the exclusive demand for accessing the actual existing information processing system, and publishes this. The processing demand conversion file 46 is a file which indicated the conversion procedure used in the case of the conversion.

[0041] The processing result converter 42 changes a carrier beam processing result into the access result described by the general-purpose notation from the existing information processing system, and returns it to the flow control section 10. The result

conversion file 47 is a file which indicated the conversion procedure used in the case of the conversion.

[0042] With this operation gestalt, the conversion file 17 shall be written by XSLT as a result of the inquiry conversion file 16. The XSLT processing engine 13 is an interpreter which interprets the notation rule of XSLT, and performs document structural transition according to the conversion file 17 as a result of the inquiry conversion file 16 described by XSLT in the data written by the general-purpose notation. It is realizable using marketing or XSLT processing software available gratuitously.

[0043] The conversion indexed file 48 is an index table required in order to choose the conversion file 47 to the processing demand described by the general-purpose notation emitted from the flow control section 10 as a result of the suitable processing demand conversion file 46.

[0044] Drawing 25 is a flow chart explaining actuation of the existing system communication processing which an adapter 40 performs. Hereafter, actuation of an adapter 40 is explained according to drawing 25.

[0045] First, an adapter receives the processing demand by the general-purpose notation sent from the flow control section. The processing demand conversion activation section 41 in an adapter 40 actually receives a treatment demand. And with reference to a conversion indexed file, the processing demand conversion file

corresponding to the value of the processing instruction in the processing demand (drawing 13 (a), drawing 14 (b)) of a general-purpose notation is chosen (S41). Drawing 19 shows an example of a conversion indexed file. The file name of the string name of a processing instruction, a corresponding processing demand conversion file, and a processing result conversion file (after-mentioned) is described by drawing 19 so that it may be shown. A processing demand conversion file (plurality) and a processing result conversion file (plurality), and a conversion indexed file are prepared for each adapter (the object for the goods information DB, for inventory control systems) of every, respectively.

[0046] Next, it changes into the processing demand of the exclusive notation which doubled the processing demand of the general-purpose notation received at step S41 with the existing system which the adapter 40 has connected according to the content of the selected processing demand conversion file (S42). For example, it assumes that the "goods information DB" which is one of the existing systems is a relational database, and when the table of the goods information stored there is having structure like drawing 20, the processing demand of the exclusive notation to "the goods information DB" becomes an SQL sentence for taking out required information from this table. The

rule for changing the processing demand (10-page drawing 13 (a)) of a general-purpose notation into the SQL sentence compared with the structure of this table is described by the selected processing demand conversion file. Although especially the description approach of a conversion rule is not specified, when the notation of XSLT is used, for example, the notation in a form as shown in drawing 21 can be considered. It is select if the processing demand (10-page drawing 13 (a)) of a general-purpose notation is changed according to the content of the processing demand conversion file of a front page. Goods ID, a trade name, and price from Goods table where Classification It is changed into the SQL sentence which is the processing demand only for "the goods information DB" of the form of '=' daily-needs'.

[0047] The processing demand (SQL sentence) by the notation only for the existing systems generated at the above-mentioned step S42 is performed (S43). If this SQL sentence is performed to the goods information table of front page drawing 20 , the result of drawing 22 will be obtained.

[0048] If the processing result of the existing system connected to the adapter is received, an adapter 40 will choose the conversion file 47, as a result of corresponding to the value of the processing instruction in the processing demand first received from the flow control section 10 with reference to the conversion indexed file 48 the same with having carried out at step S41 (S44).

[0049] As a result of choosing at step S44, the rule for changing into the processing result by the general-purpose notation the processing result of the structure depending on the existing system "the goods information DB" shown in drawing 22 is described by the conversion file 47. Although especially the description approach of a conversion rule is not specified, when the notation of XSLT is used, for example, the notation in a form as shown in drawing 23 can be considered. According to the content of this processing result conversion file, the activation result of the SQL sentence of drawing 2222 is changed into the activation result display of a general-purpose notation (S45). Then, the processing result by the general-purpose notation shown in drawing 24 is obtained. This is answered to the flow control section 10 (S46). Although the flow of processing within an adapter 40 in which it explained here makes an example "goods information DB" (RDB) which is one of the existing systems, it is said of the flow of processing within the adapter 40 connected to the inventory control system which is another existing system.

[of the same]

[0050] As mentioned above, according to the existing system cooperation control unit 1 explained in detail, when the flow of processing of a cooperation processing flow is changed and added, it is not necessary to rewrite the control program of the flow control

section 10 that what is necessary is just to change and add the processing flow indexed file 14 and the processing flow file 15.

[0051] Moreover, when the specification of the existing information processing system connected to the existing system cooperation control unit 1 is changed, it can respond only by carrying out the modification addition of the conversion file 47 as a result of the conversion indexed file 48 used within the adapter connected to the existing system, and the processing demand conversion file 46, and it is not necessary to change the control program of an adapter 40.

[0052] Moreover, what is necessary is just to change the processing demand converter 21 of user service control circles, and the processing result conversion file 24, when it corresponds to the new user client equipment connected to the existing system cooperation control unit 1 and the user interface of ** is changed.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the whole existing system cooperation control-device configuration block drawing concerning this invention.

[Drawing 2] It is a block diagram explaining the detailed configuration of the user service control section 20.

[Drawing 3] It is a block diagram explaining the detailed configuration of the flow control section 10.

[Drawing 4] It is a flow chart explaining user service control processing.

[Drawing 5] It is drawing showing the example of the general-purpose notation of a terminal-handling screen image and a processing demand.

[Drawing 6] It is drawing showing the example of the general-purpose notation of a conversion indexed file and a processing result.

[Drawing 7] It is drawing showing the example of description of a processing result conversion file.

[Drawing 8] It is drawing showing the example of the exclusive notation of a processing result.

[Drawing 9] It is drawing showing the example of a screen display of a processing result.

[Drawing 10] It is a flow chart explaining flow control processing.

[Drawing 11] It is drawing showing the example of a processing flow indexed file.

[Drawing 12] It is drawing showing the example of the processing flow file by XML.

[Drawing 13] It is drawing showing the example of the processing result received from the processing demand sent to an adapter control section, and an adapter control section.

[Drawing 14] It is drawing showing the example of description and transform-processing result of a conversion file by XSLT.

[Drawing 15] It is drawing showing the example of the processing result received from an adapter control section.

[Drawing 16] It is drawing showing the result of having summarized two files.

[Drawing 17] It is drawing showing the example of an adapter indexed file.

[Drawing 18] It is a block diagram explaining the detailed configuration of an adapter.

[Drawing 19] It is drawing showing the example of a conversion indexed file.

[Drawing 20] It is drawing showing the structure of a goods information table.

[Drawing 21] It is drawing showing the example of description of the processing demand conversion file by XSLT.

[Drawing 22] It is the table showing the activation result of an SQL sentence.

[Drawing 23] It is drawing showing the example of description of the processing result conversion file by XSLT.

[Drawing 24] It is drawing showing the processing result by the general-purpose notation.

[Drawing 25] It is a flow chart explaining the existing system communication processing processing.

[Description of Notations]

1 The Existing System Cooperation Control Unit

8 Client Computer Terminal

9 Network

10 Flow Control Section

11 Processing Flow Selection Section

12 Processing Flow Activation Section

13 Adapter Control Section

14 Processing Flow Indexed File

15 Processing Flow File

16 Structural Transition File

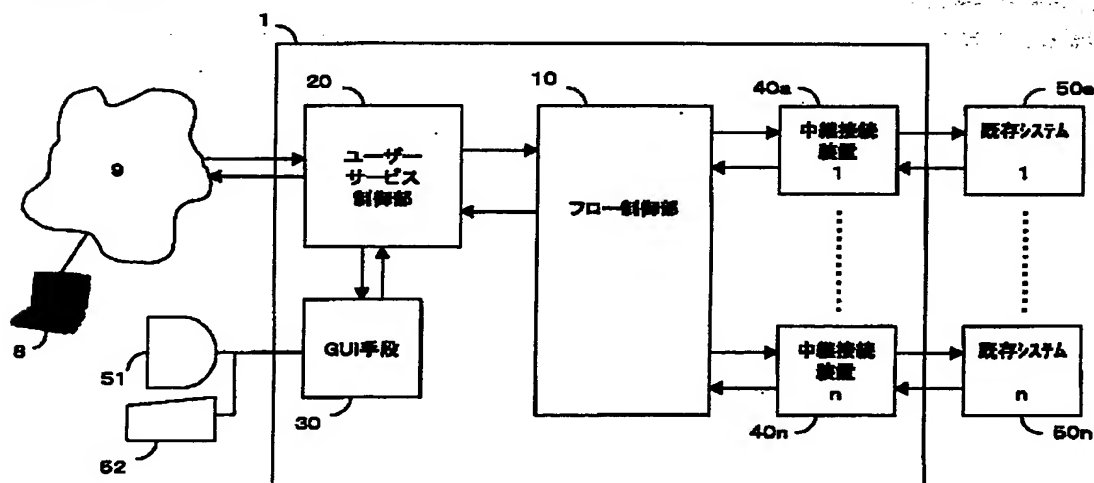
17 Adapter Indexed File

20 User Service Control Section

- 21 Processing Demand Converter
- 22 Processing Result Converter
- 23 Conversion Indexed File
- 24 Processing Result Conversion File
- 30 Graphical User Interface Means
- 40 (40a, 40b, ..) External-system trunk connection equipment (adapter)
- 41 Processing Demand Conversion Activation Section
- 42 Processing Result Converter
- 43 Transform Engine
- 46 Processing Demand Conversion File
- 47 Result Conversion File
- 48 Philharmonic Conversion Index
- 51 Graphic Display
- 52 Input Units, Such as Keyboard

DRAWINGS

[Drawing 1]



[Drawing 5]

(a)

商品検索画面

☒ 商品分類: 日用品

☐ 価 格: 円以下

検索

(b)

```
<?xml version="1.0" ?>
<prossese>

  <instruction>商品検索</instruction>

  <request>
    <category>日用品</category>
  </request>

</prossese>
```

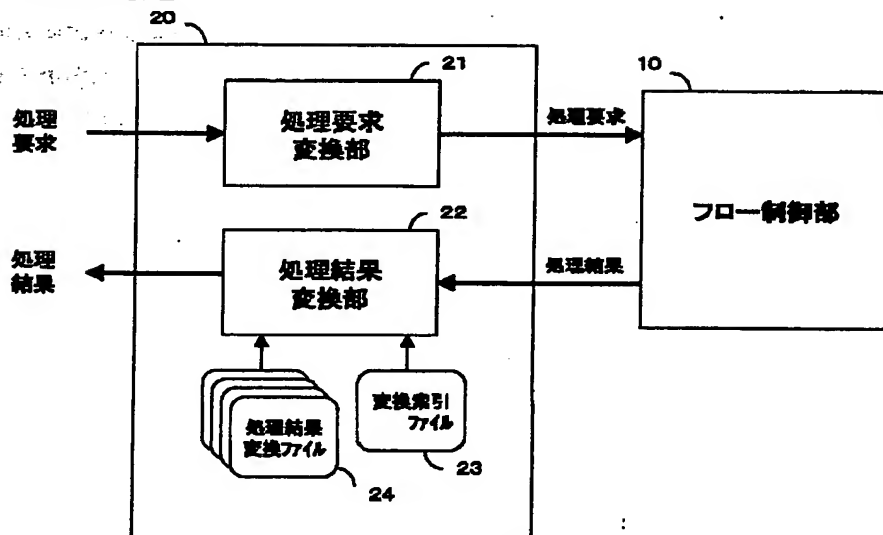
[Drawing 9]

商品検索

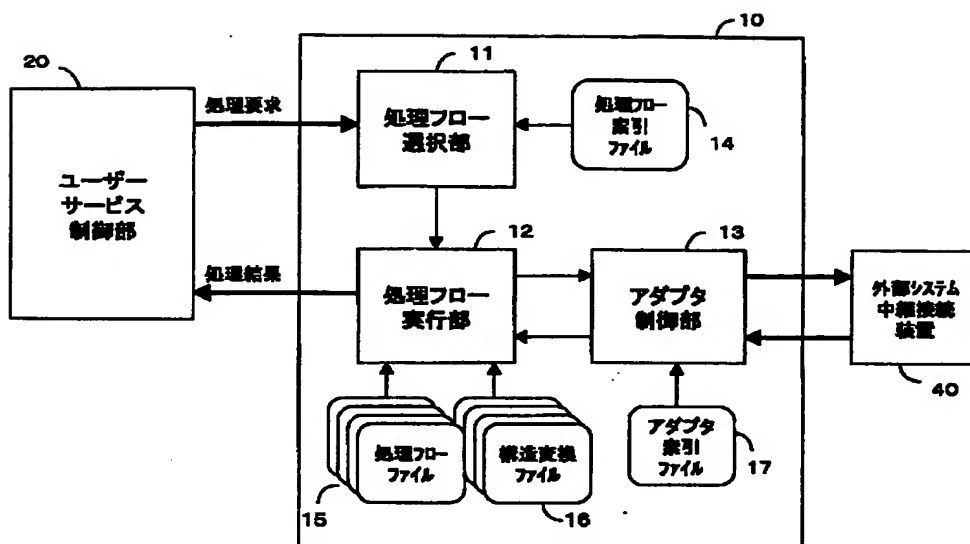
商品分類: 日用品

- シャンプー
550円
200個
- リンス
480円
350個

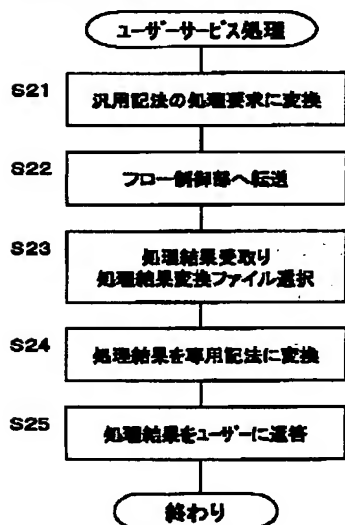
[Drawing 2]



[Drawing 3]



[Drawing 4]

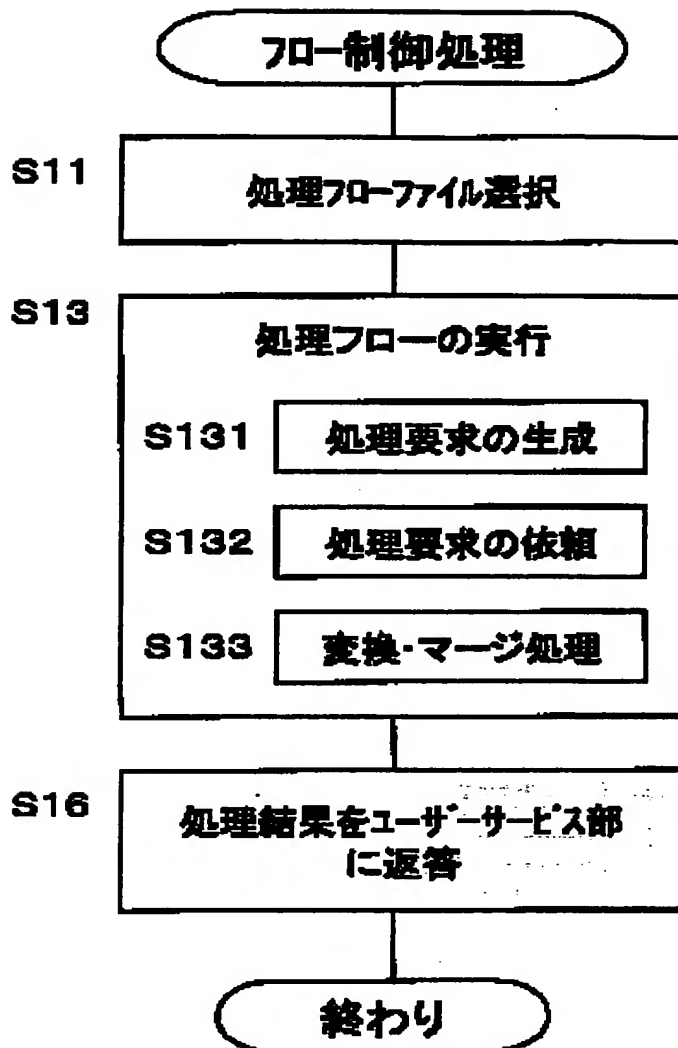


[Drawing 8]

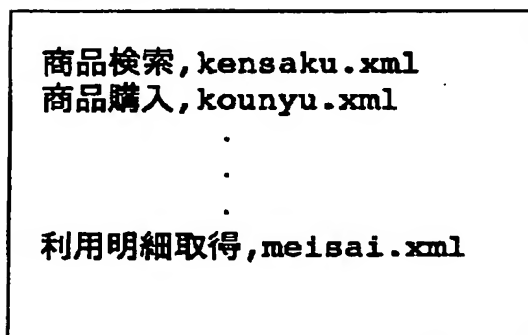
```

<HTML>
<HEADER><TITLE>処理結果</TITLE></HEADER>
<BODY>
<H2>商品検索</H2><BR/>
商品分類:日用品<BR/>
<BR/>
●シャンプー<BR/>
550円<BR/>
200個<BR/>
<BR/>
●リンス<BR/>
480円<BR/>
350個<BR/>
</BODY>
</HTML>
  
```

[Drawing 10]



[Drawing 11]



[Drawing 6]

(a)	(b)
<pre> 商品検索, kensaku.xml 商品購入, kounyu.xml 利用明細取得, maisai.xml </pre>	<pre> <?xml version="1.0" ?> <prosece> <instruction>商品検索</instruction> <request> <category>日用品</category> </request> <response> <product id="00001"> <name>シャンプー</name> <price>550</price> <stocks>200</stocks> </product> <product id="00002"> <name>リンス</name> <price>480</price> <stocks>350</stocks> </product> </response> </prosece> </pre>

[Drawing 7]

<pre> <?xml version="1.0" ?> <xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl"> <xsl:template match="/"> <HTML> <HEADER><TITLE>処理結果</TITLE></HEADER> <BODY> <H2> <xsl:value-of select="instruction"/> </H2>
 <xsl:value-of select="request/category"/>
 <xsl:apply-templates select="response"> </BODY> </HTML> </xsl:template> <xsl:template match="response"> <xsl:apply-templates select="product"> </xsl:template> </pre>	<pre> <xsl:template match="product">
 <xsl:value-of select="name"/>
 <xsl:value-of select="price"/>円
 <xsl:value-of select="stocks"/>個
 </xsl:template> </xsl:stylesheet> </pre>
--	--

[Drawing 12]

<pre> <?xml version="1.0" ?> <ProseceFlow> (1) <AdapterCtl name="商品情報DB" request="!REQUEST" result="prodlist.xml"/> (2) <Convert in="prodlist.xml" out="reqstocks.xml" xslt="tostock.xsl"/> (3) <AdapterCtl name="在庫管理システム" request="reqstocks.xml" result="stocklist.xml"/> (4) <Merge in1="prodlist.xml" in2="stocklist.xml" out="marged.xml" unit="product" key="productid"/> (5) <Return result="marged.xml"/> </ProseceFlow> </pre>
--

[Drawing 22]

商品ID	商品名	価格
0001	シャンプー	200
0002	リンス	350

[Drawing 13]

(a)

```
<?xml version="1.0" ?>
<prosese>

  <instruction>商品検索</instruction>

  <request>
    <category>日用品</category>
  </request>

</prosese>
```

(b)

```
<?xml version="1.0" ?>
<prosese>
  <instruction>商品検索</instruction>
  <request>
    <category>日用品</category>
  </request>
  <response>
    <product id ="00001">
      <name>シャンプー</name>
      <price>550</price>
    </product>
    <product id ="00002">
      <name>リンス</name>
      <price>480</price>
    </product>
  </response>
</prosese>
```

[Drawing 14]

```
<xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl">
  <xsl:template match="/">
    <prosese>
      <instruction>在庫管理</instruction>
      <xsl:apply-templates select="request">
      </xsl:template>

      <xsl:template match="response">
        <request>
          <xsl:apply-templates select="product">
          </request>
        </xsl:template>

        <xsl:template match="product">
          <productID>
            <xsl:value-of select = "%id"/>
          </productID>
        </xsl:template>
      </xsl:stylesheet>
```

(a)

(b)

```
<?xml version="1.0" ?>
<prosese>
  <instruction>在庫確認</instruction>
  <request>
    <productID>00001</productID>
    <productID>00002</productID>
  </request>
</prosese>
```

[Drawing 15]

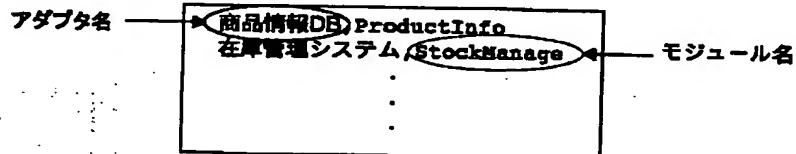
```

<?xml version="1.0" ?>
<prossece>
  <instruction>在庫確認</instruction>
  <request>
    <productID>00001</productID>
    <productID>00002</productID>
  </request>

  <response>
    <product id ="00001">
      <stocks>200</stocks>
    </product>
    <product id ="00002">
      <stocks>350</stocks>
    </product>
  </response>
</prossece>

```

[Drawing 17]



[Drawing 20]

テーブル名 : 商品テーブル			
商品ID	商品名	価格	分類
0001	シャンプー	200	日用品
0002	リンス	350	日用品
.	.	.	.
.	.	.	.

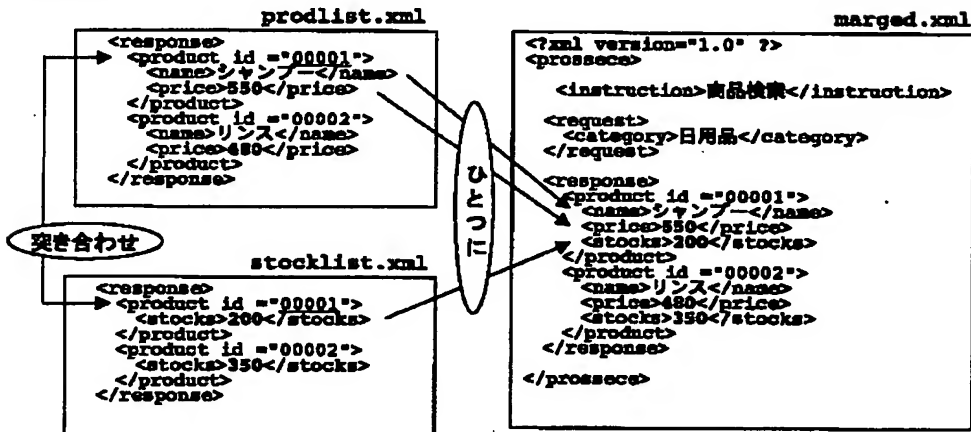
[Drawing 21]

```

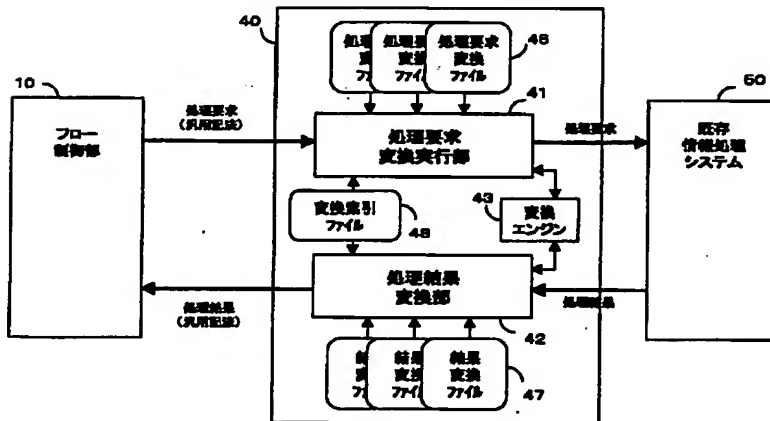
<?xml version="1.0" ?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl" >
<xsl:template match="/">
select 商品ID,商品名,価格from 商品テーブル
where 分類 = '<xsl:value-of select = "request/category"/>'
</xsl:template>
</xsl:stylesheet>

```

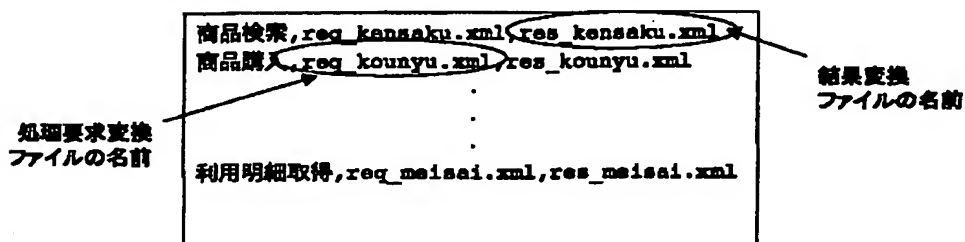
[Drawing 16]



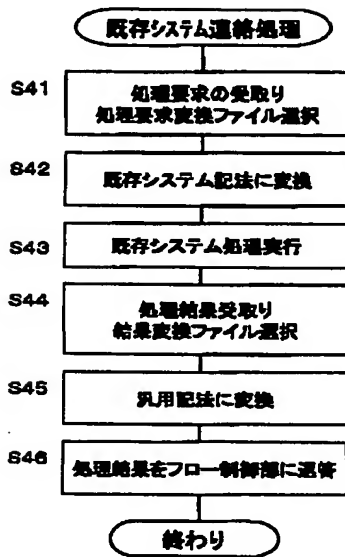
[Drawing 18]



[Drawing 19]



[Drawing 25]



[Drawing 23]

```

<?xml version="1.0" ?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl" >

<xsl:template match="/">from
<response>
  <xsl:apply-template select = "Record"/>
</response>
</xsl:template>

<xsl:template match="Record">
<product>
  <xsl:attribute name = "id">
    <xsl:value-of select = "商品ID"/>
  </xsl:attribute>
  <name><xsl:value-of select = "商品名"/></name>
  <price><xsl:value-of select = "価格"/></price>
</product>
</xsl:template>
</xsl:stylesheet>
  
```

[Drawing 24]

```

<?xml version="1.0" ?>
<response>
  <product id = "00001">
    <name>シャンプー</name>
    <price>550</price>
  </product>
  <product id = "00002">
    <name>リンス</name>
    <price>480</price>
  </product>
</response>
  
```

*** NOTICES ***

**JPO and NCIP are not responsible for any
damages caused by the use of this translation.**

**1.This document has been translated by computer. So the translation may not reflect
the original precisely.**

2.** shows the word which can not be translated,**

3.In the drawings, any words are not translated.

(19)日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11)特許出願公開番号
特開2002-108632
(P2002-108632A)

(43)公開日 平成14年4月12日(2002.4.12)

(51)Int.Cl. ⁷	識別記号	F I	テ-マ-ト*(参考)
G 0 6 F 9/46	3 6 0	G 0 6 F 9/46	3 6 0 F 5 B 0 8 5
15/00	3 1 0	15/00	3 1 0 A 5 B 0 9 8

審査請求 未請求 請求項の数7 O L (全 14 頁)

(21)出願番号 特願2000-297138(P2000-297138)

(22)出願日 平成12年9月28日(2000.9.28)

(71)出願人 000002897

大日本印刷株式会社

東京都新宿区市谷加賀町一丁目1番1号

(72)発明者 中島 孝浩

東京都新宿区市谷加賀町一丁目1番1号

大日本印刷株式会社内

(72)発明者 川上 能徳

東京都新宿区市谷加賀町一丁目1番1号

大日本印刷株式会社内

(74)代理人 100111659

弁理士 金山 聡

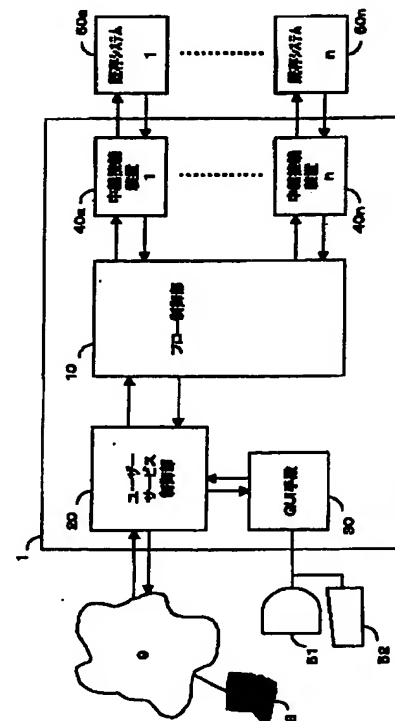
最終頁に続く

(54)【発明の名称】 既存システム連携制御装置

(57)【要約】

【課題】企業や部門で各々独立に開発され運営されてきたシステムから、それらを連携させた統合システムを構築する際の統合化コスト、および、統合化した後の保守コストを可能な限り小さくすることが可能な既存システム連携制御装置を提供することを課題とする。

【解決手段】ユーザーサービス制御部20とフロー制御部10と、1つ以上の外部システム中継接続装置40とを備えて、これらの構成要素が汎用記法で記述された情報をやり取りすることにより複数の既存の情報処理システム50を連携させてより複雑な連携処理動作を行う複合情報処理システムを簡単に実現させることを可能とする既存システム連携制御装置1により上記課題を解決する。前記フロー制御部10は、与えられた処理要求に応えるための動作手順を定めた処理フローファイル15に従って動作する。処理要求、処理結果の汎用記法にタグ付き構造化言語を採用する。



(2)

1

【特許請求の範囲】

【請求項1】 ユーザーサービス制御部とフロー制御部と、1つ以上の外部システム中継接続装置とを備えて、既存の情報処理システムを連携させて動作させる既存システム連携制御装置であって、前記ユーザーサービス制御部は、利用者からの処理要求を汎用記法で記述された形式に変換して前記フロー制御部に渡すとともに、フロー制御部から汎用記法で記述された処理結果を受取り、これを利用者のクライアント装置に適合した形式に変換して利用者に返すものであり、前記フロー制御部は、汎用記法で記述された処理要求を解釈して、既存の情報処理システムと連絡するそれぞれの外部システム中継接続装置に必要な処理要求を適切な順序で発行し、それらの処理結果を受取り、必要なデータ変換を行いこれを集約して最終的に汎用記法で記述された処理結果を作成しユーザーサービス制御部に返すものであり、前記外部システム中継接続装置は、既存の情報処理システム毎に設計され用意されるものであって、汎用記法で記述された処理要求を受取り、これにしたがって担当する既存の情報処理システムに対して、そのシステムに依存する形式の処理要求を発行し、得られた結果を汎用記法で記述して前記フロー制御部に返すものであり、これらの構成要素が汎用記法で記述された情報をやり取りすることにより複数の既存の情報処理システムを連携させてより複雑な連携処理動作を行う複合情報処理システムを簡単に実現させることを可能とする既存システム連携制御装置。

【請求項2】 前記フロー制御部は、与えられた処理要求に応えるための動作手順を定めた処理フローファイルに従って動作するものであって、処理要求の種類に応じた複数の処理フローファイルを備えたものである請求項1に記載の既存システム連携制御装置。

【請求項3】 前記フロー制御部は、ユーザーサービス制御部から与えられた処理要求から適切な処理フローファイルを選択する処理フロー選択部と、選択された処理フローファイルを解釈して、必要な処理要求を発行し、あるいはデータ変換を実行し、得られた結果をユーザーサービス制御部に返す処理フロー実行部と、適切な外部システム中継接続装置を選択して、前記処理フロー実行部の発行した処理要求をそこへ転送するアダプタ制御部を備えるものである請求項2に記載の既存システム連携制御装置。

【請求項4】 前記ユーザーサービス制御部は、ユーザーからの処理要求を汎用記法で記述された処理要求に変換する処理要求変換部と、予め用意された処理結果変換規則を記述した処理結果変換ファイルの内容にしたがって、前記フロー制御部から返された処理結果をユーザーのクライアント装置に合わせたデータ形式に変換する処理結果変換部と、から構成されるものである請求項1に記載の既存システム連携制御装置。

【請求項5】 前記外部システム中継接続装置は、与え

2

られた処理要求を、担当する既存システムに依存する処理要求に変換するための変換規則を定めた処理要求変換ファイルと、この既存システムより得られた処理結果を、汎用記法で記述するための変換規則を定めた結果変換ファイルとを備え、これらのファイルを参照して必要な変換を施して、既存システムとの中継接続を行うものである請求項1に記載の既存システム連携制御装置。

【請求項6】 前記既存システム連携制御装置が扱う処理要求、処理結果の汎用記法の記述および前記処理フローファイルの記述をタグ付きの構造化言語で行うことを特徴とする請求項1から請求項5のいずれかに記載の既存システム連携制御装置。

【請求項7】 前記既存システム連携制御装置が扱う処理要求、処理結果の汎用記法の記述および前記処理フローファイルの記述をXMLで行い、各種の変換ファイル中の変換手順の記述をXSLTで行うことを特徴とする請求項6に記載の既存システム連携制御装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 独立に開発された複数の情報処理システムを連携させるシステム制御技術またはそのような技術を用いた装置に関する。

【0002】

【従来技術】 各々独立に開発されたシステム間の連携を行う為には、従来は、システムどうしで対話を行う為のフォーマットを独自に取り決め、システム毎にその取り決めに従ったプログラムの修正及び追加を行っていた。従来単一の企業や単一の業務ごとにシステムが構築され運用されている。近年、業務形態の変化やネットワークの普及などにより、企業間や業務間で既存のシステムを連携して新しいサービスを提供する機会が増えている。従来こうしたシステム間連携を実現するにあたっては、システム毎に処理要求やデータの授受の方法を独自に決めて開発し、その後の拡張や変更はあまり考慮されることがなかった。

【0003】

【発明が解決しようとする課題】 上記のような従来のシステム連携手法では、独自の交換データのフォーマットを用いることと、その交換データフォーマットに合わせたプログラム修正を施すことから、新たに連携を行うシステムを追加したい場合やそのシステム間の処理の流れを変更したい場合には、全てのシステムのプログラムの修正が発生するなど、開発時間及びコストが膨大にかかっていた。

【0004】 本発明はこのような従来技術の問題点を考慮して考案されたものであって、企業や部門で各々独立に設計され開発され運用されてきたシステムから、それらを連携させた統合システムを構築する際の統合化コスト、および、統合化した後の保守コストを可能な限り小さくすることを可能とする既存システム連携制御装置を

(3)

3

提供することを課題とする。

【0005】

【課題を解決するための手段】そこで本発明は、ユーザーサービス制御部とフロー制御部と、1つ以上の外部システム中継接続装置とを備えて、既存の情報処理システムを連携させて動作させる既存システム連携制御装置であって、前記ユーザーサービス制御部は、利用者からの処理要求を汎用記法で記述された形式に変換して前記フロー制御部に渡すとともに、フロー制御部から汎用記法で記述された処理結果を受取り、これを利用者のクライアント装置に適合した形式に変換して利用者に返すものであり、前記フロー制御部は、汎用記法で記述された処理要求を解釈して、既存の情報処理システムと連絡するそれぞれの外部システム中継接続装置に必要な処理要求令を適切な順序で発行し、それらの処理結果を受取り、必要なデータ変換を行いこれを集約して最終的に汎用記法で記述された処理結果を作成しユーザーサービス制御部に返すものであり、前記外部システム中継接続装置は、既存の情報処理システム毎に設計され用意されるものであって、汎用記法で記述された処理要求を受取り、これにしたがって担当する既存の情報処理システムに対して、そのシステムに依存する形式の処理要求を発行し、得られた結果を汎用記法で記述して前記フロー制御部に返すものであり、これらの構成要素が汎用記法で記述された情報をやり取りすることにより複数の既存の情報処理システムを連携させてより複雑な連携処理動作を行う複合情報処理システムを簡単に実現させることを可能とする既存システム連携制御装置により上記課題を解決することを要旨とする。

【0006】本発明の好ましい実施態様の一つは、前記フロー制御部は、与えられた処理要求に応えるための動作手順を定めた処理フローファイルに従って動作するものであって、処理要求の種類に応じた複数の処理フローファイルを備えた既存システム連携制御装置である。処理フローを実行するエンジン部分と処理フローの手順を記述する処理フローファイルを分離する事により、処理フローの変更に柔軟に対応できるようになる。また、処理フローファイルの記述方法に一定の規則が必要となることにより、結果的に既存情報処理システムの連携動作を統一的に記述することが可能となる。

【0007】前記実施態様を実現するため、より具体的には、前記フロー制御部は、ユーザーサービス制御部から与えられた処理要求から適切な処理フローファイルを選択する処理フロー選択部と、選択された処理フローファイルを解釈して、必要な処理要求を発行し、あるいはデータ変換を実行し、得られた結果をユーザーサービス制御部に返す処理フロー実行部と、適切な外部システム中継接続装置を選択して、前記処理フロー実行部の発行した処理要求をそこへ転送するアダプタ制御部を備えるように構成することが望ましい。

4

【0008】本発明の好ましい実施態様の一つは、前記ユーザーサービス制御部は、ユーザーからの処理要求を汎用記法で記述された処理要求に変換する処理要求変換部と、予め用意された処理結果変換規則を記述した処理結果変換ファイルの内容にしたがって、前記フロー制御部から返された処理結果をユーザーのクライアント装置に合わせたデータ形式に変換する処理結果変換部と、から構成されるようにした既存システム連携制御装置である。変換規則を処理結果変換ファイルの形で、変換処理ロジックから分離させることで、様々なユーザークライアント装置への対応を柔軟に実現させる事が可能となる。

【0009】本発明の好ましい実施態様の一つは、前記外部システム中継接続装置は、与えられた処理要求を、担当する既存システムに依存する処理要求に変換するための変換規則を定めた処理要求変換ファイルと、この既存システムより得られた処理結果を、汎用記法で記述するための変換規則を定めた結果変換ファイルとを備え、これらのファイルを参照して必要な変換を施して、既存システムとの中継接続を行うように構成した既存システム連携制御装置である。変換規則を処理要求変換ファイルおよび結果変換ファイルの形で、変換処理ロジックから分離させることで、様々な既存情報処理システムへの対応を柔軟に実現させる事が可能となる。

【0010】本願発明の既存システム連携制御装置が扱う処理要求、処理結果の汎用記法の記述および前記処理フローファイルの記述は、タグ付きの構造化言語で行うことが望ましい。処理要求や処理結果の表現は、一般に、何らかの構造を持っているからである。また、各種の変換規則を記述しやすいからである。特に、タグ付け構造化文書記述言語の標準の一つであるXML (Extensible Markup Language) を用いることができる。XMLは、WWWブラウザなどのインターネット技術と親和性が高いので、本発明の既存システム連携制御装置ではXMLを用いることがより好ましい。

【0011】構造化データ表現としてXMLを用いる場合には、各種変換規則を表すファイルは、XML文書のスタイル記述言語であるXSL (Extensible Stylesheet Language) のサブセットであるXSLT (Extensible Stylesheet Language Transformations) で記述すると都合がよい。XSLTは、XML文書の文書構造の変換処理を記述する言語である。

【0012】

【発明の実施の形態】以下、図面を用いて、本発明に係る既存システム連携制御装置の実施形態を説明してゆく。図1は、本発明に係る既存システム連携制御装置1の全体構成図である。既存システム連携制御装置1は、ユーザーからの処理要求を受け、既存の情報処理システム50、50b、…を連携させて処理を実行し、その結果をユーザーに返答する。そのために、既存の情報処理システム50と連絡する外部システム中継接続装置

(4)

5

40a、40b、…、複数の既存情報処理システムを連携させるロジックを実行するフロー制御部10、ユーザーとのインターフェースを担うユーザーサービス制御部20を備える。

【0013】20はユーザーサービス制御部であって、遠隔地のコンピュータ8や既存システム連携制御装置1に備えられたグラフィカルユーザーインターフェース

(以下GUI)手段30から受付けた利用者からの処理要求を、構造化データで記述された処理要求に変換してフロー制御部10に伝え、フロー制御部10が得た処理結果をユーザー端末装置である遠隔地のコンピュータ8やローカルのGUI手段30に伝える働きをする。尚51、52はそれぞれローカルのグラフィックディスプレイとキーボード・マウス等の入力装置である。

【0014】ユーザー端末装置は、コンピュータに限られるものではなく、既存システム連携制御装置1とデータ通信ネットワーク9を構成することができる携帯電話端末であってもよい。ユーザーサービス制御部と端末装置との間の処理要求のデータの受渡しに必要な通信手段としては、インターネットをはじめとして、様々なネットワーク環境の利用が考えられる

【0015】外部システム中継接続装置(以下アダプタと記載)40は、それぞれ独立に開発され稼動している既存のアプリケーションシステム50a、50b、…、例えば、特定のデータベースデータを利用するアプリケーションや、特定の業務処理を実行するアプリケーションなどのうちのどれかに対応しており、フロー制御部10から受付けた動作命令にしたがって担当するアプリケーションシステムを駆動し、結果を汎用記法の表現にしてフロー制御部10に返す。アダプタ40と対応する既存のアプリケーションシステムとは、同一のコンピュータ上に存在することもあるし、一つのローカルエリアネットワーク上の異なるコンピュータ上に存在することもある。

【0016】図2は、ユーザーサービス制御部20の構造をさらに詳細に示した図である。ユーザーサービス制御部20は、処理要求変換部21と処理結果変換部22から構成され、処理結果変換部22は、変換索引ファイル23と適切に選択した処理結果変換ファイル24を参照して必要な変換処理を実行する。図4は、ユーザーサービス制御部20の行うユーザーサービス処理の流れを説明するフローチャートである。以下、図4にしたがってユーザーサービス制御部20の動作を説明する。

【0017】まず、ユーザーサービス制御部は、個人の端末装置から送られて来る処理要求のデータを受け取る。端末装置から送られて来る処理要求のデータは、端末装置の仕様に依存した専用の記法によって記述されている。受け取った処理要求のデータは、処理要求変換部21に渡され、汎用記法の処理要求へ変換される(S2

6

1)。端末装置の仕様に依存した専用の記法で表現された処理要求のデータを、本装置に合わせた汎用記法に変換する。この専用記法から汎用記法に変換する機能は、端末装置の仕様に依存した形で実装される。

【0018】端末装置の操作画面のイメージと、そこから受けた専用記法による処理要求を処理要求変換部によって汎用記法の処理要求に変換した結果を、それぞれ図5の(a)、(b)に示す。処理要求の汎用記法による記述方法は特に規定はしないが、例えば、XMLの記法を用いた場合は、図5の(b)に示すような形での記述が考えられる。図5(a)は端末装置の画面上でユーザー(個人)が「商品分類が日用品」という条件で、商品を検索する際のイメージを表している。図5(b)は端末装置から受け取った専用記法による処理要求を、処理要求変換部21が汎用記法に変換した結果を表している。図中の「商品検索」とそれを囲むタグ部分は、「処理命令」といい、この処理要求が商品を検索するものであることをフロー制御部10に伝える。「日用品」とそれを囲むタグの部分は、検索条件が「商品分類が日用品」であることを、それぞれ表している。

【0019】ステップS21で生成した汎用記法による処理要求のデータを、後述のフロー制御部10に送る(S22)。フロー制御部10では、この処理要求に従って様々なデータ処理(ここでは条件に合致する商品の検索と、在庫情報の抽出)が行われ、その結果が、同じく汎用記法の形で、ユーザーサービス制御部に返される。

【0020】ステップS21で送った処理要求の内容に従ってフロー制御部が行った処理の結果を、汎用記法の形で処理結果変換部22が受け取り、処理結果変換部22は、汎用記法で表現された処理結果を、端末装置に合わせた表現に変換する。そのためにまず、変換処理に適用する処理結果変換ファイル24を選択する(S23)。処理結果変換ファイル24の選択は、受け取った汎用記法の処理結果と、予め用意された変換索引ファイル23の内容に従って行われる。

【0021】図6に、汎用記法の処理結果と変換索引ファイル23の内容を示す。処理結果の汎用記法による記述方法は特に規定はしないが、例えば、XMLの記法を用いた場合は、図6の(b)に示すような形での記述が考えられる。変換索引ファイル23は、図6(a)に示すCSVファイルの形をとっており、ここには処理命令の文字列と、それに対応する処理結果変換ファイル24のファイル名が、記述されている。処理結果の汎用記法から専用記法へ変換は、この処理命令に対応した処理結果変換ファイルに従って行われる。

【0022】フロー制御部が返してくる処理結果は、図6(b)の部分に示すように、～のユーザーサービス制御部が送った汎用記法の処理要求に、<response>～のフロー制御部側で行った処理の結果が追加された形になっている。フロー制御

(5)

部側で追加した処理の結果の中の、
1"~ ~ までの、検索条件に合致した商品 1 件
分の情報を表しており、 ~ と ~
price>が既存の情報処理システムの一つである商品情報
データベースから取り出された商品名と価格を、
s>~ が既存の情報処理システムの一つである
在庫管理システムから取り出された、商品の在庫数を表
している。

【0023】処理結果変換部 22 は、処理結果の中の処
理命令を取出し、これをキーとして、処理結果に適用す
る処理結果変換ファイル 24 を選択する (S23)。

【0024】次に、処理結果変換部 22 は、ステップ S
23 で選択した処理結果変換ファイル 24 を、フロー制
御部 10 から受け取った汎用記法の処理結果に適用し、
ユーザの端末の仕様に合わせた専用記法の処理結果に変
換する (S24)。ここでは、ユーザの端末を WWW
(World Wide Web) ブラウザ、専用記法を (
ext Markup Language) とした場合を想定して説明す
る。処理結果変換ファイル 24 の記述方法は特に規定は
しないが、例えば、XSLT の記法を用いた場合は、図
7 に示すような形での記述が考えられる。図中の斜め ↓
部分が、汎用記法の処理結果の中のタグで囲まれた部分
のテキストデータ (図 6 (b) の太字部分) を抽出する
ことを表している。前頁の図 6 (b) の汎用記法の処理
結果に対し、図 7 の処理結果変換ファイルに記述された
変換ルールにしたがって、端末 (WWW ブラウザ) の専
用記法 () に変換した結果を図 8 に示す。図中の太
字の部分が、結果変換ファイル (XSLT) の記述にし
たがって、汎用記法 (XML) の処理結果から抽出され
たデータである。処理結果変換部で変換された図 8 の処
理結果を、WWW ブラウザで表示すると、図 9 のように
なる。

【0025】図 3 は、フロー制御部 10 の構造をさらに
詳細に示した図である。フロー制御部 10 は、ユーザ
サービス制御部 20 からの処理要求を受け、適切な処理
フローを選択する処理フロー選択部 11 と、適切に選択
した処理フローファイル 15 に従い、必要に応じて構造
変換ファイル 16 を参照して、連携処理ロジックを実行
し、処理結果をユーザサービス制御部 20 に返す処理
フロー実行部 12 と、既存の情報処理システム用の各ア
ダプタ 40 とのインターフェースをとるアダプタ制御部
13 とから構成される。

【0026】図 10 は、フロー制御部 10 の行うフロー
制御処理の流れを説明するフローチャートである。以
下、図 10 にしたがってフロー制御部 10 の動作を説明
する。

【0027】まず、ユーザサービス制御部 20 からの汎
用記法で記述された処理要求を受け取り、適切な処理フ
ローファイル 15 を選択する (S11)。実際に処置要
求を受け取るのは、フロー制御部の中の処理フロー選択

部 11 である。処理フローの選択は、処理フロー索引フ
ァイル 14 を参照して行われる。処理フロー索引ファ
イル 14 は、図 11 に示すように、処理命令の文字列と対
応する処理フローファイルのファイル名が記述されてい
る。処理フロー選択部 11 は、ユーザサービス制御部 2
0 から受け取った汎用記法の処理要求の中の処理命令
(<instruction>と</instruction>で挟まれた文字列)
の値と一致する処理命令に対応する処理フローファイル
を選択する。

【0028】処理フローファイル 15 には、受け取った
処理要求に対して、実際にどのような処理を行うかの手
順が記述されている。処理フローファイル 15 は、処理
命令の種類に対応して予め複数個用意されており、処理
フロー索引ファイル 14 により、処理要求中に記述され
た処理命令の値をキーとして、実際の処理要求と関係付
けられる。

【0029】処理フロー実行部 12 は、ステップ S11
で選択された処理フローファイル 15 と、汎用記法によ
る処理要求を受け取り、選択された処理フローファイル
15 の中に記述された手順に従って、受け取った処理要
求に対する様々な処理を行う。実際には処理フローファ
イル 15 の内容にしたがって、次の 1) ~ 3) のような
処理を行う。

1) 既存システムとの仲介を行うアダプタを制御するア
ダプタ制御部 13 (後述) に処理を依頼するために、新
たな処理要求を生成し (S131)、これをアダプタ制
御部 13 に渡す (S132)。

2) アダプタ制御部 13 から処理結果を受取り、受け取
った処理結果から、さらに別の既存システムに対する処
理要求を生成し (S131)、再びアダプタ制御部 13
に渡す (S132)。

3) 必要に応じて、受け取った処理要求やアダプタ制御
部 13 から受け取った処理結果などのマージや構造変換
などの加工処理を施す (S133)。

【0030】処理フローファイルの記法は特に規定しな
いが、例えば XML の記法を用いた場合は、図 12 のよ
うになる。図 12 の処理フローの中の (1) ~ (5) の
各行が、実際に処理フロー実行部 12 で行われる処理の
内容を記述した部分である。以下、各行に対応する処理
の内容を順に説明する。尚、「商品情報 DB」、「在庫
管理システム」は、既存システム連携制御装置 1 が連携
させる既存の情報処理システムである。

【0031】(1): 「商品情報」への処理の依頼
記述: <AdapterCtl name = "商品情報"
EUEST" result = "prodlist.xml"/>

- この行では、本装置に接続されている既存システム
の中の「商品情報」に、ユーザサービス制御部 20 から
受け取った処理要求を渡し、商品情報の検索を依頼して
いる。

- 実際には、この行の記述の内容が、アダプタ制御部 1

9

3 (後述) に渡され、そこで「商品情報」に接続されているアダプタが選択され、選択されたアダプタの中で処理要求が実行され、その処理結果が返ってくる。

- 「商品情報」の部分、処理を行うアダプタを特定するための情報である。

- 「」の「」は、アダプタ制御部を経由して、アダプタに送られる処理要求を指定する記述で、通常は「」の部分に処理要求を格納したファイルのファイル名が記述されるが、「T」と記述されていた場合は、アダプタ制御部13を経由して、アダプタに送られる処理要求が、フロー制御部が最初にユーザサービス制御部から受けとったものであることを表している。

- 「」の「」は、アダプタ制御部を経由して返ってくるアダプタによる処理結果を格納する先のファイルを指定する記述で、「」の部分に記述されたファイル名で指定されたファイルに、アダプタによる処理結果が格納される。
- この行の記述によってアダプタ制御部に送られる処理要求 (!REUEST) と、アダプタ制御部から受け取る処理結果 () の内容を、図13 (a)、(b) に示す。

- 図13 (a) の、アダプタ制御部に送られる処理要求 (!REUEST) は、図5 (b) のユーザサービス制御部が生成する処理要求と同様の内容である。

- 図13 (b) の、アダプタ制御部から受け取る処理結果には、「日用品」という条件で、「商品情報」を検索した結果 (商品名、価格) が格納されている。

【0032】 (2) : 「在庫管理システム」に送る処理要求の生成

記述 : <Convert in="prodlist.xml" out = "reqstocks.xml" xslt="tostock.xsl"/>

- この行は、図13 (b) の検索結果に含まれている商品の在庫情報を、本装置に接続されている既存システムの中の「在庫管理システム」に問い合わせるために、新たな処理要求を生成することを記述したものである。

- 行中の「」は、「」で指定されるファイルに記述されたルールに従って、「」で指定されるファイルを、「」で指定されるファイルに変換することを表している。

- ここでは、先の (1) で得られた商品検索結果 ist.xml を、XSLT ファイル の内容に従って変換した結果を、ファイル に格納することを意味している。

- 図14 (a)、(b) に、変換ルールを記述した XSLT ファイル と、変換結果 l の内容を示す。

- 図14 (b) に示すように、「商品情報」から受け取った商品情報 (図13 (b)) が、図14 (a) の変換ルールを適用することによって、「在庫管理システ

(6)

10

ム」への在庫問い合わせのための処理要求に変換されている。

【0033】 (3) : 「在庫管理システム」への処理の依頼

記述 : <AdapterCtl name = "在庫管理システム" t="reqstocks.xml" result = "stocklist.xml"/>

- この行では、本装置に接続されている既存システムの1つである「在庫管理システム」に、先の (2) で生成された在庫問い合わせのための処理要求を渡し、商品の在庫情報の取得を依頼している。

- 実際には、この行の記述の内容が、アダプタ制御部13 (後述) に渡され、そこで既存システムに接続されているアダプタが選択され、選択されたアダプタの中で処理要求が実行され、その処理結果が返ってくる。

- 「在庫管理システム」の部分、処理を行うアダプタを特定するための情報である。

- 「」の「」は、アダプタ制御部13を経由して、アダプタに送られる処理要求を指定する記述で、「」の部分にファイル名で指定されたファイルの内容が、アダプタ制御部13を経由してアダプタに送られる。

- 「」の「」は、アダプタ制御部を経由して返ってくるアダプタによる処理結果を格納する先のファイルを指定する記述で、「」の部分に記述されたファイル名で指定されたファイルに、アダプタによる処理結果が格納される。
- この行の記述によってアダプタ制御部13から受け取る処理結果 () の内容を、図15に示す。

【0034】 (4) : 商品情報と在庫情報のマージ

記述 : <Merge in1="prodlist.xml" in2 = "stocklist.xml" out = "marged.xml" unit = "product" key = "@id" />

- この行では、ユーザサービス制御部20に返すための、最終的な処理結果を生成するために、(2) で得られた「商品情報」の検索結果 (図13 (b)) と、(3) で得られた「在庫管理システム」の在庫情報をひとつにまとめることを表している。

- 行中の「」は、「1」・「2」で指定されるファイルをひとつにまとめた結果を、「」で指定されるファイルに格納することを意味している。

- ここでは、商品情報を格納したファイル l と在庫情報を格納したファイル をまとめた結果を、ファイル に格納することを表している。

- 「」・「」は、2つのファイルをまとめる際に、ファイル中のデータをどのように突合せるかを指定するための記述で、ここでは2つのファイルの要素 同士を、属性 の値で突合せるこ

(7)

11

とを表している。

- 2つのファイル と を
まとめた結果を格納したファイル の内容
を、図16に示す。

- このファイル が、最終的にユーザサービス制御部に返される処理結果となる (図6 (b) と内容が同じである)。

【0035】 (5) : 処理結果を返す

記述 : <Return result = "marged.xml" />

- この行では、「 ・ ・ 」で指定された
ファイルの内容を、ユーザサービス制御部20に返すこ
とを意味している。

- したがってここでは、(4)で商品情報と在庫情報を
ひとつにまとめた結果を格納したファイル
の内容が、フロー制御部10の処理結果として、ユーザ
サービス制御部20に返される。

【0036】アダプタ制御部13の働きについて説明す
る。アダプタ制御部13は、処理フロー実行部12から
受けた処理要求ステートメントから適切なアダプタ40
を選択して、処理要求ステートメントを選択したアダプ
タに発行することである。処理フロー実行部12が発行
した処理要求ステートメント、

<AdapterCtl name = "アダプタ名 処理要求
が格納されたファイル 処理結果が格納されたファ
イル

から「 アダプタ名」をキーとして、対応する
既存システムに接続されているアダプタ40を選択す
る。アダプタの選択は、予め用意されたアダプタ索引フ
ァイル17の中から、上記の処理フローの記述の中の
「 アダプタ名」に対応するアダプタのモジュ
ール名を取得することによって行われる。アダプタ索引
ファイル17の例を図17に示す、

【0037】アダプタ40が処理した結果は、処理要求
ステートメント

<AdapterCtl name = "アダプタ名 処理要求
が格納されたファイル 処理結果が格納された
>

の中の、「 ・ ・ 」で指定されたファイル
に、アダプタによって格納される。

【0038】処理結果を返す (S16)。処理フロー実
行部が実行する処理フローの中の

<Return result = "処理結果が格納されたファイル

という記述に従って、「 ・ ・ 」で指定された
ファイルの内容を、ユーザサービス制御部20に返す。

【0039】次に、外部システム中継接続装置 (アダプ
タ) 40の詳細を説明する。図18はアダプタ40の詳細
構成図である。アダプタ40は、処理要求変換実行部
41、処理結果変換部42、XSLT処理エンジン1
3、処理要求変換ファイル46、結果変換ファイル4
7、変換索引ファイル48を備える。

12

【0040】処理要求変換実行部41は、汎用記法で記
述された処理要求を、実際の既存の情報処理システムに
アクセスするための専用要求に変換し、これを発行す
る。処理要求変換ファイル46は、その変換の際に用い
られる変換手順を記載したファイルである。

【0041】処理結果変換部42は、既存の情報処理シ
ステムから受けた処理結果を汎用記法で記述されたアク
セス結果に変換してフロー制御部10に返す。結果変換
ファイル47は、その変換の際に用いられる変換手順を
記載したファイルである。

【0042】この実施形態では、問合せ変換ファイル1
6および結果変換ファイル17はXSLTによって表記
しているものとする。XSLT処理エンジン13は、X
SLTの表記ルールを解釈するインタープリターであっ
て、汎用記法で表記されたデータを、XSLTで記述さ
れた問合せ変換ファイル16および結果変換ファイル1
7にしたがって文書構造変換を行う。市販または無償で
入手可能なXSLT処理ソフトウェアを利用して実現で
きる。

【0043】変換索引ファイル48は、フロー制御部1
0から発せられた汎用記法で記述された処理要求に対し
て適切な処理要求変換ファイル46、結果変換ファイル
47を選択するために必要な索引表である。

【0044】図25は、アダプタ40が行う既存システ
ム連絡処理の動作を説明するフローチャートである。以
下、図25にしたがって、アダプタ40の動作を説明す
る。

【0045】まず、アダプタはフロー制御部から送られ
てくる、汎用記法による処理要求を受け取る。実際に処
置要求を受け取るのは、アダプタ40の中の処理要求変
換実行部41である。そして、変換索引ファイルを参照
し、汎用記法の処理要求 (図13 (a)、図14

(b)) の中の処理命令の値に対応する処理要求変換フ
ァイルを選択する (S41)。図19は、変換索引ファ
イルの一例を示したものである。図19に示すように、
処理命令の文字列名と対応する処理要求変換ファイル及
び、処理結果変換ファイル (後述) のファイル名が記述
されている。処理要求変換ファイル (複数個) および処
理結果変換ファイル (複数個) と変換索引ファイルは、
各アダプタ (商品情報 用、在庫管理システム用) ごと
に、それぞれ用意される。

【0046】次に、ステップS41で受け取った汎用記
法の処理要求を、選択した処理要求変換ファイルの内容
にしたがって、アダプタ40が接続している既存システ
ムに合わせた専用記法の処理要求に変換する (S4
2)。例えば、既存システムのひとつである「商品情報
DB」がリレーショナルデータベースであると想定し、そ
こに格納されている、商品情報のテーブルが図20のよ
うな構造をしていた場合、「商品情報」に対する専用
記法の処理要求は、このテーブルから必要な情報を取り

(8)

13

出すための、SQL文になる。選択された処理要求変換ファイルには、汎用記法の処理要求(10頁の図13

(a))を、このテーブルの構造に合わせたSQL文に変換するためのルールが記述されている。変換ルールの記述方法は特に規定しないが、例えばXSLTの記法を用いた場合は、図21に示すような形での記法が考えられる。前頁の処理要求変換ファイルの内容に従って、汎用記法の処理要求(10頁の図13(a))を変換すると、

```
select 商品 商品名 価格 商品テーブル
分類 日用品
```

のかたちの、「商品情報」専用の処理要求であるSQL文に変換される。

【0047】上記ステップS42で生成された既存システム専用の記法による処理要求(SQL文)を実行する(S43)。前頁図20の商品情報テーブルに対して、このSQL文を実行すると、図22の結果が得られる。

【0048】アダプタ40は、アダプタに接続されている既存システムの処理結果を受取ると、ステップS41で行ったのと同様に、変換索引ファイル48を参照し、初めにフロー制御部10から受け取った処理要求の中の処理命令の値に対応する結果変換ファイル47を選択する(S44)。

【0049】ステップS44で選択した結果変換ファイル47には、図22に示す既存システム「商品情報」に依存した構造の処理結果を、汎用記法による処理結果に変換するためのルールが記述されている。変換ルールの記述方法は特に規定しないが、例えばXSLTの記法を用いた場合は、図23に示すような形での記法が考えられる。この処理結果変換ファイルの内容に従って、図22のSQL文の実行結果を汎用記法の実行結果表示に変換する(S45)。すると図24に示す汎用記法による処理結果が得られる。これを、フロー制御部10に返答する(S46)。ここで説明した、アダプタ40内での処理の流れは、既存システムのうちのひとつである「商品情報」()を例にしたものであるが、もうひとつの既存システムである在庫管理システムに接続されたアダプタ40内での処理の流れも同様である。

【0050】以上、詳しく説明した既存システム連携制御装置1によれば、連携処理フローの処理の流れが変更・追加された場合は、処理フロー索引ファイル14、処理フローファイル15を変更・追加するだけでよく、フロー制御部10の制御プログラムを書き換える必要はない。

【0051】また、既存システム連携制御装置1に接続される既存の情報処理システムの仕様が変更された場合は、その既存システムに接続されているアダプタ内で使用する変換索引ファイル48、処理要求変換ファイル46、結果変換ファイル47を変更追加するだけで対応でき、アダプタ40の制御プログラムを変更する必要はな

14

い。

【0052】また、既存システム連携制御装置1に接続される新たなユーザークライアント装置に対応する場合は、ユーザーインターフェースが変更される場合は、ユーザーサービス制御部内の処理要求変換部21、処理結果変換ファイル24を変更するだけでよい。

【0053】

【発明の効果】以上詳しく説明したように、本発明に係る既存システム連携制御装置1の構成をとることにより、既存の、それぞれ独立に設計され開発された情報処理装置を最小のコストで統合化して、より複雑な処理を行う複合情報処理システムとして稼働させることができる。しかも統合化したあとの機能追加や変更などに要する保守コストを可能な限り小さくするようにできる。

【図面の簡単な説明】

【図1】 本発明に係る既存システム連携制御装置の全体構成ブロック図である。

【図2】 ユーザーサービス制御部20の詳細な構成を説明するブロック図である。

【図3】 フロー制御部10の詳細な構成を説明するブロック図である。

【図4】 ユーザーサービス制御処理を説明するフローチャートである。

【図5】 端末操作画面イメージおよび処理要求の汎用記法の例を示す図である。

【図6】 変換索引ファイルおよび処理結果の汎用記法の例を示す図である。

【図7】 処理結果変換ファイルの記述例を示す図である。

【図8】 処理結果の専用記法の例を示す図である。

【図9】 処理結果の画面表示例を示す図である。

【図10】 フロー制御処理を説明するフローチャートである。

【図11】 処理フロー索引ファイルの例を示す図である。

【図12】 XMLによる処理フローファイルの例を示す図である。

【図13】 アダプタ制御部に送られる処理要求とアダプタ制御部から受ける処理結果の例を示す図である。

【図14】 XSLTによる変換ファイルの記述例と変換処理結果を示す図である。

【図15】 アダプタ制御部から受け取る処理結果の例を示す図である。

【図16】 2つのファイルをまとめた結果を示す図である。

【図17】 アダプタ索引ファイルの例を示す図である。

【図18】 アダプタの詳細な構成を説明するブロック図である。

【図19】 変換索引ファイルの例を示す図である。

【図20】 商品情報テーブルの構造を示す図である。

(9)

15

【図 2 1】 X S L T による処理要求変換ファイルの記述例を示す図である。

【図 2 2】 S Q L 文の実行結果を示す表である。

【図 2 3】 X S L T による処理結果変換ファイルの記述例を示す図である。

【図 2 4】 汎用記法による処理結果を示す図である。

【図 2 5】 既存システム連絡処理処理を説明するフローチャートである。

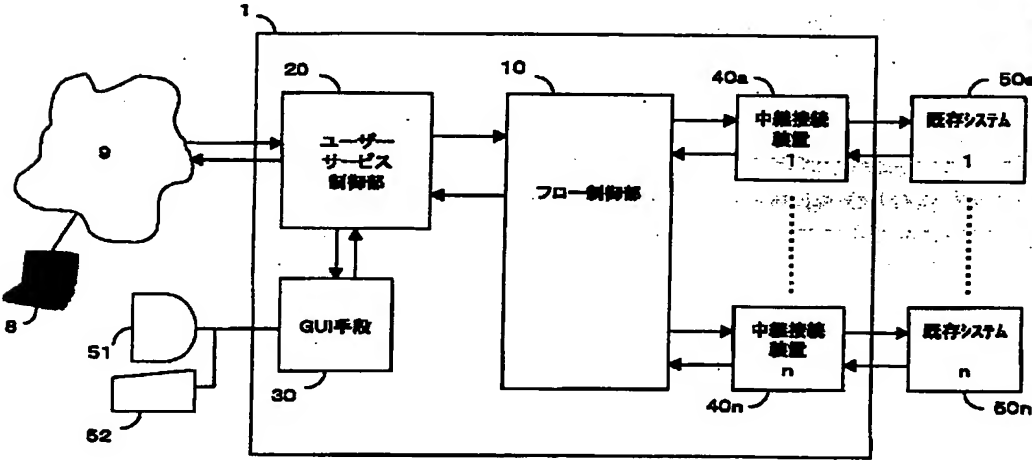
【符号の説明】

- 1 既存システム連携制御装置
- 8 クライアントコンピュータ端末
- 9 ネットワーク
- 10 フロー制御部
- 11 処理フロー選択部
- 12 処理フロー実行部
- 13 アダプタ制御部
- 14 処理フロー索引ファイル
- 15 処理フローファイル

- 16 構造変換ファイル
- 17 アダプタ索引ファイル
- 20 ユーザーサービス制御部
- 21 処理要求変換部
- 22 処理結果変換部
- 23 変換索引ファイル
- 24 処理結果変換ファイル
- 30 グラフィカルユーザーインターフェース手段
- 40 (40 a、40 b、...) 外部システム中継接
- 10 続装置 (アダプタ)
- 41 処理要求変換実行部
- 42 処理結果変換部
- 43 変換エンジン
- 46 処理要求変換ファイル
- 47 結果変換ファイル
- 48 変換索引フィル
- 51 グラフィックディスプレイ
- 52 キーボードなどの入力装置

【図 1】

【図 9】



【図 5】

(a)

商品検索画面

☒ 商品分類:日用品

☐ 価格: 円以下

検索

(b)

```
<?xml version="1.0" ?>
<prossece>

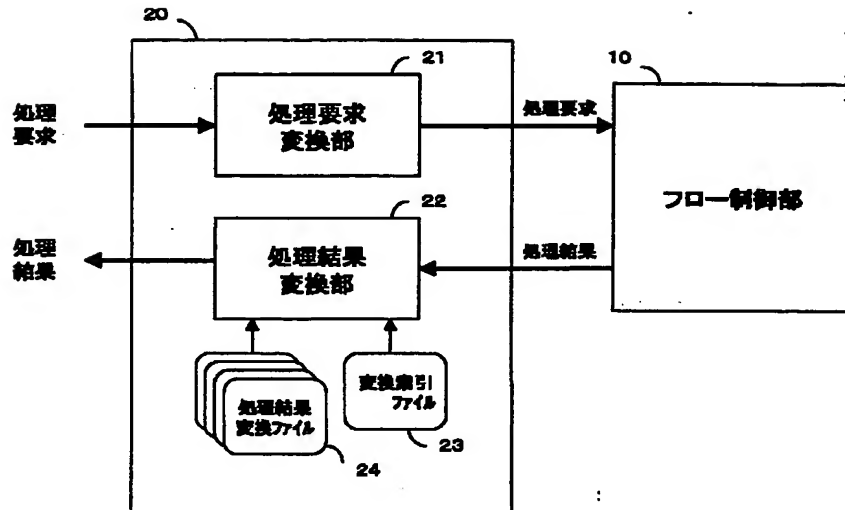
  <instruction>商品検索</instruction>

  <request>
    <category>日用品</category>
  </request>

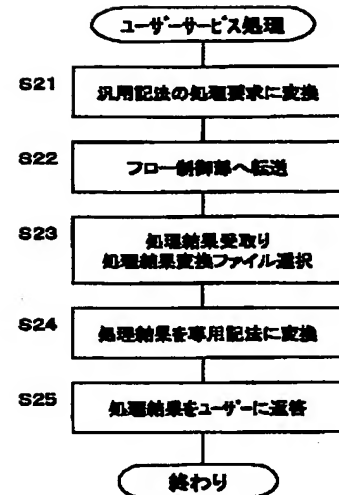
</prossece>
```

(10)

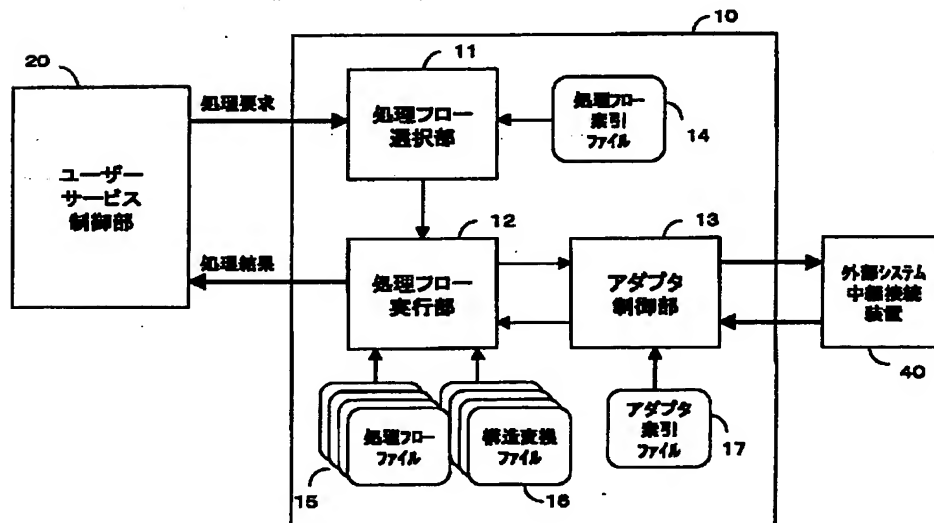
【図2】



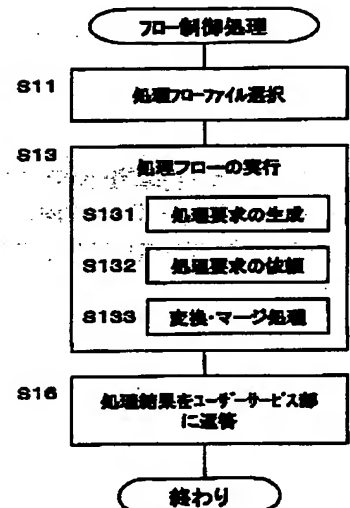
【図4】



【図3】



【図10】



【図8】

```
<HTML>
<HEADER><TITLE>処理結果</TITLE></HEADER>
<BODY>
<H2>商品検索</H2><BR/>
商品分類:日用品<BR/>
<BR/>
●シャンプー<BR/>
550円<BR/>
200個<BR/>
<BR/>
●リンス<BR/>
480円<BR/>
350個<BR/>
</BODY>
</HTML>
```

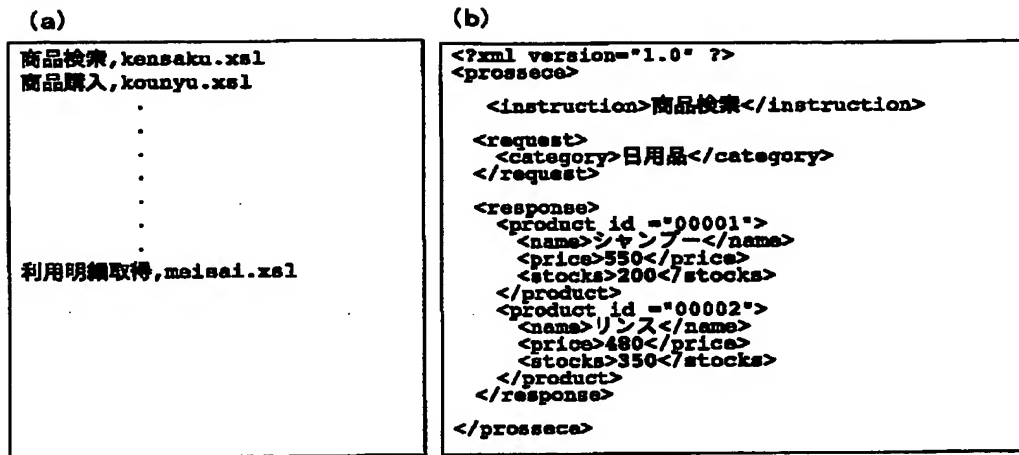
【図11】

商品検索, kensaku.xml
商品購入, kounyu.xml

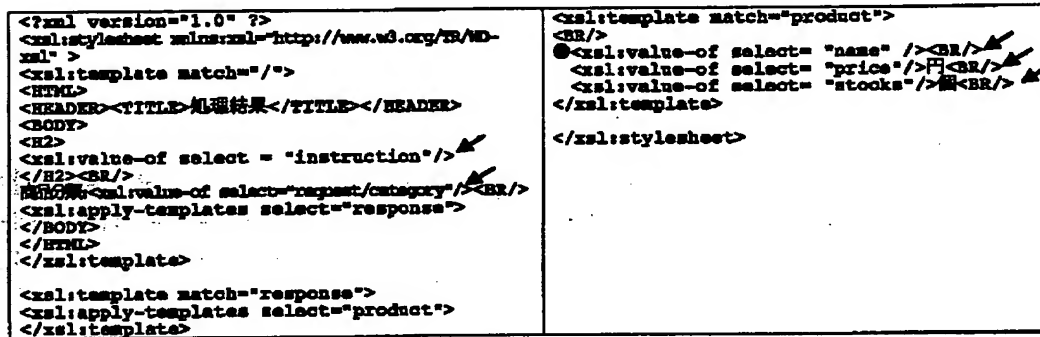
利用明細取得, meisai.xml

(11)

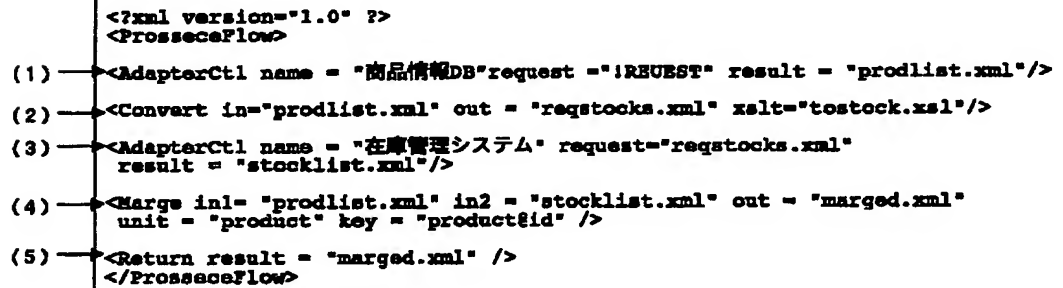
【図6】



【図7】



【図12】

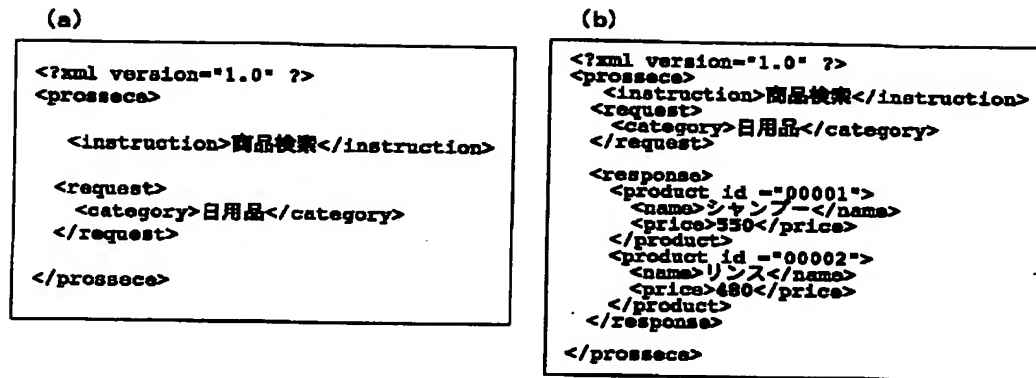


【図22】

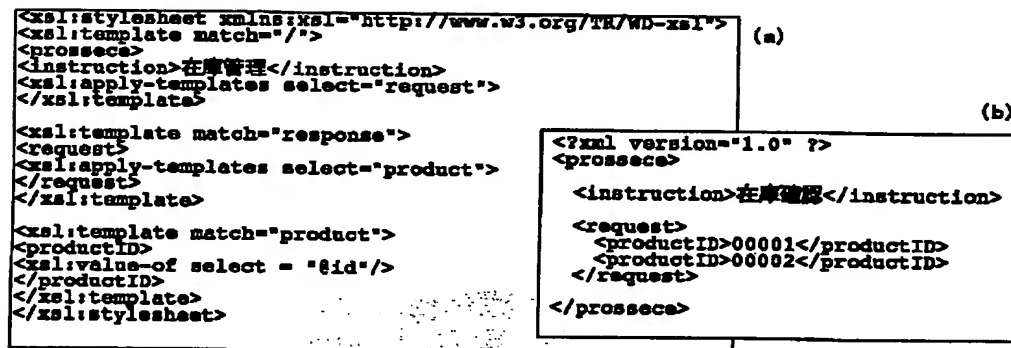
商品ID	商品名	価格
0001	シャンプー	200
0002	リンス	350

(12)

【図13】

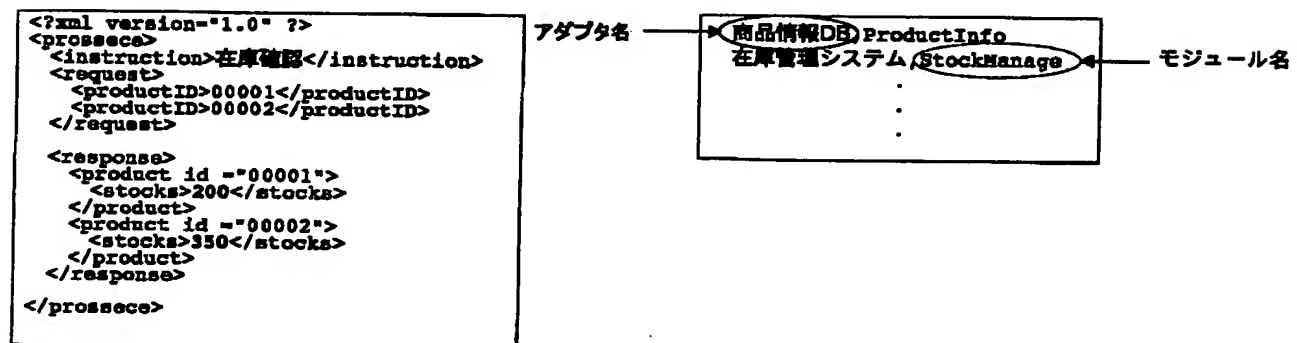


【図14】



【図15】

【図17】



【図20】

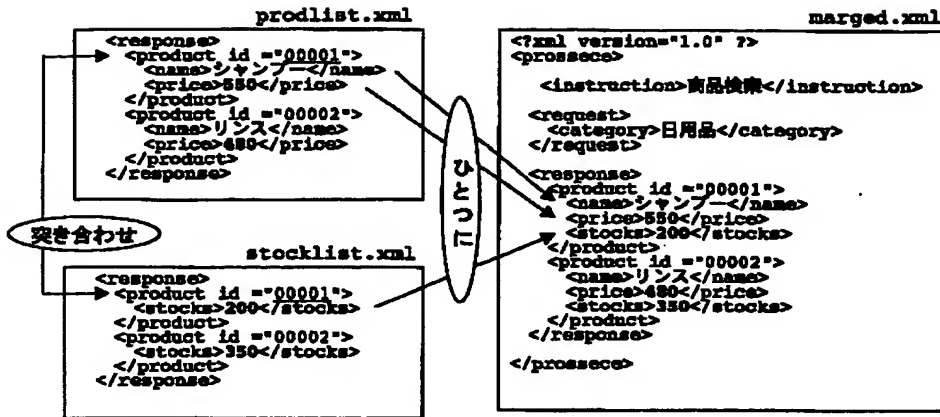
【図21】

テーブル名: 商品テーブル			
商品ID	商品名	価格	分類
0001	シャンプー	200	日用品
0002	リンス	350	日用品
.	.	.	.
.	.	.	.

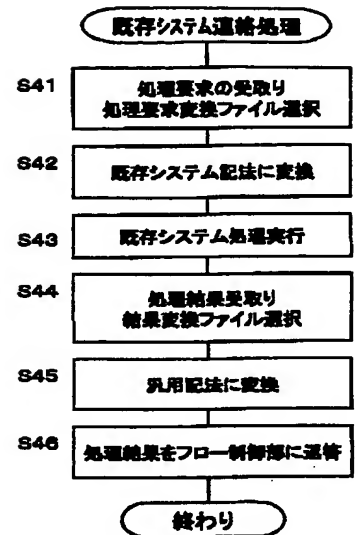
```
<?xml version="1.0" ?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl" >
<xsl:template match="/">
  select 商品ID, 商品名, 価格 from 商品テーブル
  where 分類 = '<xsl:value-of select = "request/category"/>'
</xsl:template>
</xsl:stylesheet>
```

(13)

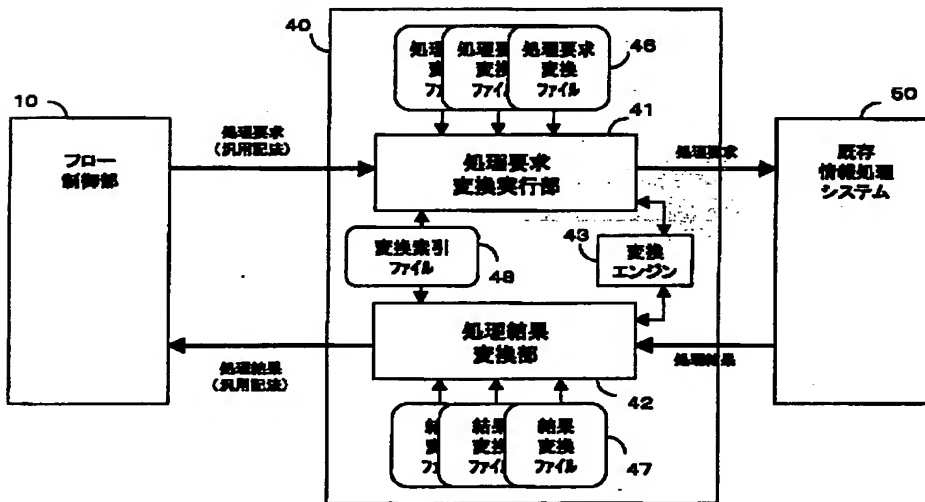
【図16】



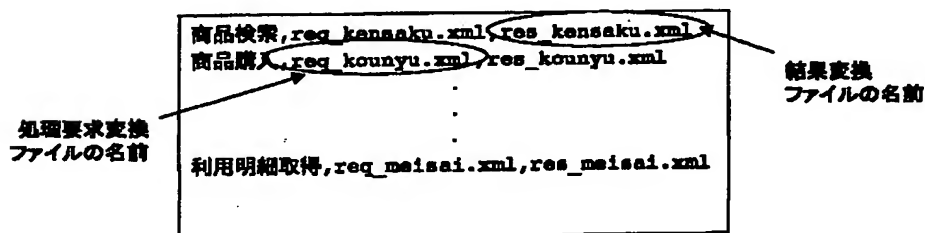
【図25】



【図18】



【図19】



(14)

【図23】

```

<?xml version="1.0" ?>
<xsl:stylesheet xmlns:xsl="http://www.w3.org/TR/WD-xsl" >
  <xsl:template match="/">from
  <response>
    <xsl:apply-template select = "Record"/>
  </response>
</xsl:template>

  <xsl:template match="Record">
    <product>
      <xsl:attribute name = "id">
        <xsl:value-of select = "商品ID"/>
      </xsl:attribute>
      <name><xsl:value-of select = "商品名"/></name>
      <price><xsl:value-of select = "価格"/></price>
    </product>
  </xsl:template>
</xsl:stylesheet>

```

【図24】

```

<?xml version="1.0" ?>
<response>
  <product id = "00001">
    <name>シャンプー</name>
    <price>550</price>
  </product>
  <product id = "00002">
    <name>リンス</name>
    <price>480</price>
  </product>
</response>

```

フロントページの続き

(72) 発明者 根上 俊幸
東京都新宿区市谷加賀町一丁目1番1号
大日本印刷株式会社内

(72) 発明者 葛西 裕昭
東京都新宿区市谷加賀町一丁目1番1号
大日本印刷株式会社内

(72) 発明者 野坂 祥江
東京都新宿区市谷加賀町一丁目1番1号
大日本印刷株式会社内

(72) 発明者 斎藤 美佐
東京都新宿区市谷加賀町一丁目1番1号
大日本印刷株式会社内

Fターム 参考) 5 085 07
5B098 AA10 GC01 GC16

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☒ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☒ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.